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Interactivity and health communication: content analysis of interactive elements on HIV/AIDS awareness and prevention websites

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Interactivity and Health Communication: Content Analysis of Interactive Elements on HIV/AIDS Awareness and Prevention Websites

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Abstract

Individuals increasingly turn to the Internet to satisfy their information needs, including information on health-related issues like HIV/AIDS. Researchers agree that an important characteristic of this medium is interactivity. The concept can be viewed from either a user perspective, focusing on the user's experience with the medium or a system perspective, analyzing the design of technology. The current study followed the system perspective to analyze the various features on HIV/AIDS awareness and prevention websites. Although all websites were interactive, there was considerable variation in the types of features present. This study attempted to find a relationship, if any, between the degree of interactivity and the page rank of the websites on five of the most popular search engines.

Keywords:

Internet, Interactivity, HIV/AIDS, Health Communication, Content Analysis, Websites

Introduction

Since the early days of the Internet when it was developed largely to allow researchers in the Defense Departments to share computing abilities through messaging systems and electronic mail (Klopfenstein, 2000), the medium has achieved exponential growth, turning into one of the fastest growing channels of communication in history (Surrat, 2001). In 1993, two years after the World Wide Web was introduced, the medium consisted of only 130 sites. By 2000, the number had risen to more than one billion with 105 million hosts (Surratt, 2001).

The growth in the medium has also fostered enquiries into the social implications of the medium including its relatively new characteristic of interactivity. According to McMillan (2002), researchers have struggled to define the concept of interactivity. Studies today look at interactivity as a two-dimensional concept – user-centric and medium-centric (McMillan 2002). The current study looks at HIV/AIDS websites to explore the elements of interactivity and the consequent "stickiness" (Rafaeli & Sudweeks, 1997) from a system-centric perspective.

Interactivity plays an important role in disseminating information because it makes the medium of the Internet more user-centric by making it more of a "pull" than a "push" medium. As van Dijk (2004) and Liu & Shrum (2002) suggest, the Internet provides different dimensions like user control and feedback that enable users to actively seek information (pull) rather than having information delivered to them (push). This nature of the Internet to hand control over to the user makes it a more viable medium for disseminating relevant information to the user. This ability of the medium brings into focus the design of the system or the technology itself.

As the Internet fast becomes the medium of choice, it becomes important to understand this design and its capabilities in disseminating health information (Fox, 2005). The growth of

the medium and its relative newness make it important to understand its capabilities in providing information. Due to the comprehensive nature of health information available on the Internet and finite resources, this study limits itself to HIV/AIDS-related websites.

The current study, based on previous research, identifies and records the different system-centric elements of interactivity on HIV/AIDS-related websites. It will also investigate whether or not there is a relation between the occurrence of these elements and the page rank of these websites on different search engines.

To provide a context to the current study let us look at some of the numbers that indicate the rapid growth of not only the Internet, but also HIV/AIDS.

Growth of the Internet

Computer ownership and Internet access rates are on the rise. According to the US Census report issued in 2005, in the U.S. alone the percentage of households with computer access in 2003 was 61.8% up from 8.2% in 1984, and the percentage of households with Internet access was 54.7% in 2003 up from 18% in 1997.

Statistics on broadband usage have also registered an increase across the board in several countries. According to a 2004 report released by the International Telecommunication Union, the top economies in the world, in terms of broadband usage are Korea (24.8 persons per 100 inhabitants), Hong Kong (22 persons per 100 inhabitants) and the Netherlands (19.8 persons per 100 inhabitants). The Organization for Economic Cooperation and Development (OECD) (2005) reports that almost every country showed a marked increase in broadband usage with Iceland ranking first with a usage rate of 26.7 persons per 100 inhabitants. Of all the member countries in

the OECD, the U.S. has the largest number of broadband subscribers with 49 million, representing 39% of all broadband connections in the OECD.

A PEW Internet and American Life Project survey conducted by Mary Madden (2006) also found that the broadband connections at home in the U.S. are growing at a rapid rate. The survey found that 42% (about 84 million) now have broadband access as opposed to 29% (about 59 million) in January 2006.

Another statistic indicating the growth of the medium is penetration rate. Penetration rate is defined as "…the percentage of the total population of a given country or region that uses the Internet" (http://www.internetworldstats.com/surfing.htm, para 13). While the penetration rate of the Internet in Africa is still at only 1.5%, in North America the penetration rate has grown to 67.4% with the total population of Internet users growing at 104% (http://www.internetworldstats.com/stats.htm). According to a survey conducted in 2006 by the PEW Internet and American Life Project, Internet penetration among adults in the U.S. is at an all time high with 73% of the respondents (about 147 million adults) identifying themselves as Internet users, up from 66% (about 133 million adults) in 2005 (Madden, 2006).

Spread of HIV/AIDS

Almost mirroring the growth of the Internet has been the exponential growth of the HIV/AIDS virus. In 1981, the Centre for Disease Control and Prevention reported the first cases of AIDS-related pneumonia among a small group of gay men in Los Angeles. However, it is believed that the epidemic was prevalent in other parts of the world before 1981, but it was only in the early eighties that a systematic study and search for the methods of preventions and cure of the disease started. Since then the epidemic has grown in alarming proportions. The population

of adults and children who are living with human immunodeficiency virus (HIV) has risen to 39.4 million – the highest ever (UNAIDS Report, 2006). By 2004 alone, 4.9 million people had acquired the virus (UNAIDS Report, 2006).

According to the UNAIDS report (2006) on the epidemic, the incidences of AIDS have been increasing steadily in the past two years with the steepest rise in East Asia, Eastern Europe and Central Asia. Sub-Saharan Africa is one of the regions most affected by the AIDS epidemic. It is home to 10% of the world's population, but 60% of all people living with HIV reside in the Sub-Saharan African region. In actual numbers, it is estimated to be nearly 25.4 million. After Sub-Saharan Africa, the Caribbean region is the most affected part of the world where the leading cause of death among adults aged 15-44 is AIDS. While the scale of the epidemic has been lower in North America, the rise has been quite significant. It is estimated that in 2005 1.2 million people were living with HIV in the United States (UNAIDS Report, 2006).

Health Information

In this scenario of almost uncontrollable epidemic, it becomes important to understand the role of media in disseminating health information. Traditional media (excluding media channels like PBS and NPR) generally tend to set aside some time and space for public service messaging, a fact reflected in the finding of a national survey by Douglas Swanson (1999) on the attitudes and policies of television and radio broadcasters. In the survey it was found that broadcasters indicate a strong commitment to airing of public service messages, however the time offered to these messages is limited with several stations dedicating up to15 minutes and in some cases up to half an hour for several issues, including that of HIV/AIDS. "On the specific issue of HIV/AIDS, 97.8% of the broadcasters reported dedicating 15 minutes or less each day

for PSA's, while 2.2% reported setting aside up to 30 minutes for this information" (Swanson, 1999, p. 10). In this scenario, the Internet provides a viable alternative as it can provide a dedicated space for people seeking health-related information, including information on HIV/AIDS. Consequently, it becomes increasingly important to understand the capabilities of the Internet for disseminating and propagating communication related to safe practices, counseling, available retroviral cure and other related information and support.

Internet and Health Information

This shift towards the Internet by individuals seeking health-related information is already underway as the Pew Internet and American Life project reports that the Internet has become a preferred medium of information on health-related topics (Fox, 2005). It further suggests that nearly 80% of online users have searched for information on at least one major health topic, of which 66% have used the medium to search for information on a specific disease or a medical problem (Fox, 2005). However, it must be noted that the users of such information on the Internet tend to have more education or live in metropolitan areas (Hogan & Palmer, 2005). In a nationwide survey on information preferences and practices among people living with HIV/AIDS, it was found that 43% of the respondents preferred to get their information from doctors, and only 36% of the respondents found the Internet to be easily available (Hogan & Palmer, 2005).

A study conducted by Kalichman and associates (2005) on Internet use among people living with HIV/AIDS and coping and health-related problems found that more than half of HIV-positive adults reported using the Internet, with nearly half the participants searching for health

information and nearly one-third reporting activities involving searching for health-related information.

The rapid rise of the Internet, especially as a tool for health-related information, and the almost parallel rise of the HIV/AIDS epidemic makes this study relevant. As more and more people turn to the Internet for their information on health-related needs, the concept of interactivity becomes important as it is a key difference between traditional media and the Internet (Cassell, Jackson & Cheuvront, 1998).

Interactivity

Interactivity as a concept is a relatively new phenomenon with several scholars attempting to define and delineate the elements of this process (Rafaeli and Sudweeks, 1997; Liu & Shrum, 2002; Downes and McMillan, 2000; Barnes, 2001 & 2003; van Dijk, 2004). An important characteristic of interactivity is its closeness to interpersonal communication. These scholars suggest that since computer-mediated communication can mimic face-to-face communication it enables high interactivity. As Barnes (2001) states:

> “In online social dynamics, interactivity is associated with message qualities that encourage people to respond and/or interact with other group members. These qualities include asking questions, requesting opinions from other people, or making provocative statements. Interactivity can lead to sociability because it fosters interpersonal correspondence" (p. 41).

Cassell and associates (1998) in their exploration of health communication on the Internet found that persuasive communication involves internalization of messages, which is possible in transactional and response-driven models like interpersonal communication (Cassell et al.,

1998). The authors further suggest that as communication over the Internet is transactional where it allows for give and take between sender and receiver "…allowing both parties to bring something to the exchange" (p. 73), it offers a viable channel for persuasive health communication. According to Cassell and associates (1998), communication through mass media does not always allow for this sort of transaction and response, as it usually does not involve feedback. And when it does, there is considerable time lag between responses which affects message relevance and recall (Smith, 1992, cited in Cassell, 1998). However, the Internet represents a hybrid channel, which incorporates the reach and content of a mass medium with interactive capabilities that can effectively mimic interpersonal communication. As Cassell and associates (1998) state:

> "The capacity of these resources to provide immediate, transactional feedback suggests that they can be used to realize health behavior change in a manner that is similar to interpersonal channels, while their resemblance to forms of mass media suggests an ability to do so on a larger scale than previously considered possible" (Cassell et.al., 1998, p. 74).

Downes and McMillan (2000) list the dominant influences that define the concept today as sociological or emerging from the computer science tradition. Quoting Jensen (1998), the researchers suggest that under the sociological perspective, interactivity is defined as a relation between two or more people who mutually adapt their behavior and actions in relation to one another in any given situation (Cited in Downes & McMillan, 2000, p 158). Under the computer science tradition, the definition of interactivity has involved studying the interaction of human beings with computers and "focusing on improving the interface of computer hardware and

software" (Downes & McMillan, 2000, p 158). According to Jensen (1998), research within this computer science tradition has identified "the style of control that exists between the human and the computer as a key determinant of interactivity (Cited in Downes & McMillan, 2000, p 158). The authors further suggest that it has been only in the past two decades that an attempt has been made in defining interactivity within the paradigm of computer-mediated communication (Downes & McMillan, 2000). One such early attempt came from the work of Rafaeli and Sudweeks (1997) where they suggest that interactivity is sequential and related. "It is the extent to which messages in a sequence relate to each other, and especially the extent to which later messages recount the relatedness of earlier messages" (Para 9). Rafaeli and Sudweeks (1997) further suggest that interactivity varies along a continuum from declarative (one-way) communication to reactive (two-way) communication where the response is related to the message immediately preceding. Interactive communication takes into account not just the preceding message but related messages in an earlier reactive (two-way) sequence of communication.

Characteristics of the Interactive Process

According to Barnes (2003), all computer-mediated communication can be interactive, however there are three different ways in which this process occurs. The first is "interpersonal interactivity", where the social networks are created through features like e-mail, chat rooms, discussion lists and instant messenger; and there is an element of two-way communication. The second is "informational interactivity", where huge amounts of data can be accessed and acquired through navigation features like links, online forms and search facilities, among others.

The third is “Human Computer Interaction”, which refers to the ways in which a user interacts with computer hardware and software.

Other attempts at defining interactivity have largely included breaking down the elements of the process (For example: van Dijk, 2004; Liu & Shrum, 2002; Downes & McMillan, 2000). The levels of interactivity are considered to be one of the defining characteristics of digital media like the Internet (van Dijk, 2004). According to Jan van Dijk (2004), there are three important levels of interactivity. The elementary level is the possibility of establishing a two-way communication, which is, according to van Dijk (2004), the space dimension. The second level of interactivity is the degree of synchronicity – duration of time between sending, receiving and responding to a message. While the Internet provides for this kind of two-way communication, the factor of immediacy is somewhat lacking i.e., the exchange of messages does not occur simultaneously or consecutively (van Dijk, 2004). The third level of interactivity is the extent of control exercised by participating parties. “As digital media are more interactive than traditional media, they enable a shift in the balance of power to the user and the side of demand” (van Dijk, 2004). However, van Dijk also warns that this level of interactivity is not fully realized when the “design of the medium” is dominated by the view of the creator of the message (2004). Van Dijk also lists a fourth level of interactivity where the process of “…acting and reacting occurs with an understanding of meanings and contexts by all inter-actors involved. This mental dimension is a necessary condition for full interactivity, for example in physical conversation of computer mediated communication” (van Dijk, 2004). This fourth element largely addresses the user experience in a computer-mediated environment.

According to Yuping Liu and L. J. Shrum, interactivity is defined as: “The degree to which two or more communication parties can act on each other, on the communication medium, and on the messages and the degree to which such influences are synchronized” (2002, p. 54). Liu and Shrum, like van Dijk (2004), specify three dimensions of interactivity: active control, two-way communication and synchronicity. Active control is the level of control exercised by the user in the process of communication, which is minimal in the case of traditional media as they are linear in nature. The Internet which is characterized by a “network of linked contents” (Hoffman and Novak, 1996, Cited in Liu & Shrum, 2002, p.54) and hence nonlinear in structure with parallel content, enables the user to “…customize information flow and jump from one location in the network to another” (Liu & Shrum, 2002, p. 54).

Two-way communication refers to the ability of the medium to facilitate reciprocal communication. While traditional media do have the ability to build in elements of reciprocity like response coupons in print ads, letters to the editor in print journalism or 1-800 numbers in television ads, the time lag in response, as Cassell (1998) mentions, deteriorates the quality of response and feedback. Therefore, interaction is limited in these kinds of traditional media except in those of the telephone. However, on the Internet instant, or near instant, feedback is possible through various elements like e-mail, comments section or forms that could be filled out on the website.

Liu and Shrum (2002) also differentiate between two types of feedback – explicit and implicit. Implicit feedback occurs when a company tracks the user’s online behavior by recording a banner ad’s click-through rate or records the amount of time a user spends on a

particular website. Explicit feedback can be provided by the consumers through various practices like those mentioned above.

Synchronicity, as mentioned by van Dijk (2004) as well, refers to the degree to which input and response are simultaneous in the communication process (Liu & Shrum, 2002). However, Liu and Shrum also suggest that there is a difference between structural synchronicity and experiential synchronicity. Structural synchronicity refers to the hardware aspects such as server structures, bandwidth and linkages between documents. Experiential synchronicity refers to the time gap that the user feels or experiences (2002). This may be influenced by the user's expectations. For instance, if response to e-mails on a particular Website is provided weekly and the user expects a response in a day or two, then the level of felt (experiential) synchronicity would be low. This distinction between the structural and the experiential can also be applied to the other dimensions of two-way communication and active control (Liu & Shrum, 2002). The concepts of two-way communication and synchronicity as articulated by van Dijk (2004) and Liu & Shrum (2002) play an important role in defining interactivity. These two elements make it possible for communication over the Internet to resemble interpersonal communication. Like in the case of interpersonal communication, communication over the Internet reduces the time gap and provides greater opportunity for feedback, as discussed above.

Downes and McMillan (2000) like Rafaeli and Sudweeks (1997) suggest that communication in a computer-mediated environment is inherently interactive; however, varying levels of interactivity exist. The elements delineated by Downes and McMillan, message dimension (direction, time, and place) and the participant dimension (control, responsiveness and perceived goals), operate on a continuum. An interesting finding of their study, which was

conducted using interviews of experts, suggests that interactivity occurs even when the constituent elements like direction of communication and user control are lower on the continuum. According to the study, interactive communication occurs even when some of the elements of the interactive process (for example, user control and direction) are lower on the continuum. What this suggests is that for interactive communication to have occurred, it is not necessary for all the elements of the process to be in operation. Another important finding of this study was the emergence of the idea of 'place' as an integral part of interactive communication. Several of the interviewees commented on the ability of the Internet to transcend geography and provide a virtual space (Downes & McMillan, 2000). One of the expert respondents further suggest that this process of creating a sense of place attracts the user time and again and that the user is not only viewing the website but is being transported to a specific place (Downes & McMillan, 2000). Another respondent establishes the importance of user control in the current scenario as he suggests that opportunity now exists to put control in the hands of the user, whereas the traditional one-to-many model of information distribution handed control to the disseminator of information by default. During the interviews, Downes and McMillan (2000) also found that respondents considered two-way communication an integral part of what defines interactivity. "They talked about how the technologies inherent in the internet allow for a robust feedback loop" (Downes & McMillan, 2000, p. 167). Most of the respondents also indicated the ability of the user to shift roles between sender and receiver is also integral to how interactivity is perceived (Downes & McMillan, 2000).

In an exploratory study of health-related websites, McMillan (2002) proposes a four-part model of cyber interactivity to analyze features based on perceived interactivity involving the

two dimensions of direction and control. The features that fall within the dimension of direction include email, registration, survey, bulletin boards, order/purchase and chat while the features that fall within the dimension of receiver control include search, choice, curiosity devices, games and links. The study also measured the user attitudes, relevance and behavioral intention on a seven-point scale. This seven-point scale provided an insight into the user's perception of interactivity. On the perception-based model, it was found that the websites indicated a relatively high level of interactivity; however, on the feature-based analysis some of the websites scored relatively lower – for example chat rooms (McMillan, 2002). In terms of user attitudes, relevance and behavioral intention, no significant relation was found between these and the feature-based model. However, in terms of a perception-based model, there was a significant relationship found on measures of attitude and relevance (McMillan, 2002). This indicated that, while some of the features of a website that facilitate the interactive process were either absent or limited, it did not affect the perception of interactivity among users.

As the studies discussed above indicate, a standard definition of interactivity is yet to be established. However, most of this early work has involved identifying several processes that are possible on the Internet and are similar to processes seen in interpersonal communication. These include user control, two-way communication, synchronicity and the creation of a sense of place, all four of which have been discussed above. These processes are enabled by inherent features of the medium itself. The features include links, search options, site maps, menu, frequently asked questions, registration process, personalized content, studies/surveys, online community (message boards/chat rooms), blogs, site updates, links to additional software, visual aids like animation, charts and tables, photographs, videos and audio, contact, cookies and RSS feeds,

among others. The current study will use this framework and identify, categorize and record the features mentioned above to gain a sense of how interactive HIV/AIDS awareness and prevention websites are.

Also, an important distinction that emerges from the review of the above literature is the one between a system-centered perspective and a user-centered perspective. Although complementary, a system-centered perspective analyzes the design of technology while the user-centered perspective studies the process involved in human interactions and experience with the technology (Unz & Hesse, 1999; Cited in Stout, Villegas & Kim, 2001). Since the current study will focus on the design of the technology, in this case a website, and the various features that a website uses to foster interactivity, it is situated firmly within the system-centric tradition. In other words, this study looks at "interpersonal and informational interactivity" (Barnes, 2003) as fostered by different features of a website, as opposed to "Human Computer Interaction (HCI)" (Barnes, 2003), which involves user experience with computer hardware and software.

As Stout et al. (2001) suggest past studies within the system-centric perspective have looked at features present within a site as indicative of the interactive traits of the medium. Following them the current study tests the selected websites for elements or features that facilitate these processes of two-way communication, establishing user control, synchronicity and providing a sense of place. These features are delineated and categorized based on the previous research done in the field and analyzed within the system-centric tradition. A complete breakdown of the features studied is provided in Table 1.

Related Studies

Several other related studies (Macias 2003; Macias & Lewis, 2003; Paul, 2001; Stout, Villegas & Kim 2000) in the field of public service and health communication use a similar framework of listing and analyzing the various features of a website to study the impact of interactivity. These studies analyze websites for interactive features and study their impact on comprehension (Macias, 2003), the ability to provide greater amounts of information and their persuasive capabilities (Macias & Lewis, 2003), user responsiveness (Paul, 2001) and impact on learning (Stout et al 2000). These studies are also categorized within a system-centric perspective and are briefly discussed below.

Macias (2003) found that interactivity helps in the process of comprehension. According to Batra, Myers and Aaker (1996) “most researchers today agree that good comprehension is vital for persuasion to occur” (Cited in Macias, 2003, p.237). The study explored how interactivity and individual difference variables, product placement and Web experience, affect comprehension of interactive advertising websites. It was found that interactivity helps to improve comprehension, and this relationship was influenced by product involvement and Web experience.

However, according to Macias (2003), how interactivity is applied to the content also plays an important role in comprehension. The level of interactivity should be directly related to the content and message. Interactive features that have nothing to do with the content will be distracting and decrease comprehension. Alternatively, interactivity that is related to the content or features of a product helps to increase comprehension (Macias, 2003). In terms of product involvement, the study found that “the more involved the individual is with a product, the better

they will comprehend the message presented and the more positive they will feel of their comprehension" (Macias, 2003, p.42). Another important finding of the study was that individuals with higher levels of experience with the Web are more likely to comprehend websites with higher levels of interactivity than individuals with lower levels of experience with the Web. However, the latter are more likely to comprehend websites with low levels of interactivity better (Macias, 2003). At this point, it is also important to understand that level of interactivity, as per this study, was understood as the occurrence of the number of interactive features (links, menus, buttons, games etc.). Therefore, websites with higher number of features required that the user be more attuned to the Internet and have higher levels of experience than for websites with simpler interfaces, which were comprehensible to users with lower Web experience as well. As this study shows, interactivity plays an important role in comprehension.

In addition to the levels and different dimensions of interactivity that a website possesses, it can also provide greater amounts of information and possess persuasive capabilities. In a content analysis of direct-to-consumer (DTC) prescription drug websites, Macias and Lewis (2003) found that websites are more suited to fulfilling Food and Drug Administration (FDA) guidelines since they are able to include much more information than print or television advertisements. In addition to the increased medical and drug information, these websites are also able to include monetary incentives like rebates, coupons and free trials, many of which are not included in traditional advertisements both in print and on television. Added to the higher levels of information and inducements, the websites showed high levels of interactivity. According to the study "DTC websites are doing a good job of harnessing the power of the web to educate and form relationships with the consumer by using graphics (e.g., charts, tables, etc.),

animation (e.g., how drugs work, how the conditions affect the body, etc.), and interactivity (e.g., links, e-mail updates/newsletters, assessment quizzes, etc.)" (Macias & Lewis, 2003, p. 51).

Paul (2001) content analyzed 64 disaster-relief sites and found that most sites, although filled with news and explanatory content, did not show high enough responsiveness by users and other dimensions of interactivity. The study delineated two broad areas of interactivity: the amount of effort Web page users must exert and the amount of effort Web page producers must exert. According to the study, the more effort the user has to exert the more interactive the media system is. The study defines seven dimensions of interactivity: complexity of choice, ease of adding information, facilitation of interpersonal communication, monitoring information use, responsiveness to users, facilitation of site navigation and immediacy of information. Of these, three fall within the category of user effort. They are complexity of choice, ease of adding information and facilitation of interpersonal communication.

Complexity of choice indicates the amount of choice that is available to the user in terms of information, advertisements and entertainment. The more the choice, the higher the level of interaction required to make a choice increases. Ease of adding information indicates the extent to which a user can actually influence content through interaction.

According to Paul (2001), as technology evolves so the does the number of opportunities for the user to become a source of information that can be communicated to a mass audience. Facilitation of interpersonal communication suggests the extent to which new media are able to mimic interpersonal communication. While this is made possible through online discussions, teleconferencing and instant messaging, it is important to remember that this process is usually

asynchronous. However, it still requires an increase in attention and effort users must provide, therefore increasing levels of interactivity.

The other four dimensions of interactivity, monitoring information use, responsiveness to users, facilitation of site navigation and immediacy of information (Paul 2001), fall within the category of effort that producers must exert to decrease the amount of effort required of the user

> "…and must devote increased amount of attention to design and interaction with the users of the site in order for interactivity to take place. For example, efforts to increase the navigability of a site may result in reduction in effort extended by the user. Less effort in this case would not necessarily indicate a lower level of interactivity, but rather an increase in Website producers' share of the effort expended" (Paul, 2001).

Monitoring information use is the extent to which a media system can monitor its own use. Cookies and online surveys are examples of this kind of effort on the part of the producer. Responsiveness to users indicates the extent to which the interaction between a media system and an individual can resemble human interaction. Response to comments and e-mails from the producer in a timely manner can resemble human interaction to a certain extent; however, it requires increased effort on the part of the producer. Facilitation of site navigation involves the effort by the producer to include design elements like tool bars, site map, search engines and menu bars among other options, to make navigation easier for the user. The dimension of immediacy of information indicates the effort the website producer puts forth in keeping the page current and up to date. This study (Paul, 2001) checked for the levels of interactivity both in

dimensions that required effort from the user and in dimensions that required effort from the producer. It also checked for any co-relation that might exist between the two.

According to Paul (2001), most of the home pages on the disaster-relief sites were only moderately interactive. While a quite a few had very high content choice, they lacked in specific sub-dimensions. For example, while many of the sites had a lot of information and news on the disaster, they had comparatively less commercial or agency information. In the dimension of effort producers need to exert none of the websites scored over a 50% and only a quarter gave an indication that there was interest in monitoring user activity on their website.

Stout, Villegas and Kim (2001) investigated the use of interactive tools to enhance learning on health-related websites, and found that while the majority of the sites in the sample do use interactive tools, the overall occurrence is quite low. It has to be noted that the term 'tools' as used by Stout et.al., is the same as the 'features' used by the current study. They refer to the specific elements like hyperlinks, menus, etc. found on websites. The study also revealed that the tools of interactivity were higher in .com sites followed by .gov sites and finally .org sites. There were also distinct differences found in how the different top-level domains (.com, .gov and .org) use these tools of interactivity with .com sites being likely to use the most dimensions listed in the study.

As we have seen, interactivity is an important characteristic of the Internet that differentiates it from other media and is also the source of its perceived potential in disseminating persuasive messages. Following the lead of these studies, and the broad framework provided by early theorists, the current study breaks down different features of the medium and categorizes them under the dimensions of navigation, personalized content, site

accessibility and feedback. These dimensions include all the features that provide a user with a sense of control and place, foster two-way communication and synchronicity, which are all important elements of the interactivity. The features are detailed out and listed in Table 1.

Although the history of studies in the field of mass communication has been rich and varied, the studies tend to be largely associated with the media effects tradition (Surratt, 2001), and more focused on print and television while Internet research has been somewhat lacking. A thematic meta-analysis of research trends in mass communication journals conducted by David Weaver and Rasha Kamhawi (2003) found that print and broadcast media have been the focus of many studies, while television has gained further prominence, with many studies being conducted on the visual language of the medium. Although studies on the Internet are on the rise, they are yet to "…dethrone television as the focus of research" (Weaver & Kamhawi, 2003, Para 11).

Added to this is the fact that studies in the field of computer-mediated communication and specifically interactivity are a fairly recent phenomenon. This study aims to add to this growing literature and, in some measure, fill the gap in Internet research.

Research Questions

This study explored the different system-centric dimensions of the Internet that make it more interactive than traditional media and analyzed HIV/AIDS awareness and prevention websites to see how many of these elements the websites use. Furthermore, as part of the exploratory nature of this study, it determined the frequency of occurrence within these sites of the listed dimensions of interactivity and reported the correlation, if any, between the levels of interactivity and the page rank of the websites.

The research questions for this study are listed as follows:

RQ 1: What system-centric dimensions of interactivity do HIV/AIDS awareness and prevention websites use?

RQ 2: Is there a relationship between the level of interactivity and the page rank on search engines of these sites?

Method

The method of analysis for this study is quantitative content analysis. The population studied is websites that contained any kind of information related to HIV/AIDS. The sample size for the study was culled from five of the most popular search engines in use as listed by Nielsen Net Ratings MegaView search reporting service (Sullivan, 2006). These are Google (49.2%), Yahoo (23.8%), MSN (9.65%), AOL (6.3%), and Ask (2.6%). These percentages are culled from the MegaView search reporting service that measures the search behavior of approximately 500,000 people worldwide, who have real-time meters on their computers that monitor the sites they visit. “The activity at more than 60 search sites makes up the total search volume upon which percentages are based” (Sullivan, 2006). And this activity for the month of August 2006 included 5.6 billion searches (Sullivan 2006). In each of these search engines, the term HIV/AIDS was typed and the first 50 unsponsored results listed for each search engine. This process was repeated one week later to eliminate any website that did not consistently rank in the top 50 and a master list of 250 websites was created from which a sample size of 89 websites was generated by using a random number generator and discarding any repeated websites.

For the purpose of this study, only websites that had a direct connection to HIV/AIDS-related information were coded. For example, newspaper and magazine sites that had pages or

articles on HIV/AIDS were not coded for this study. Due to the lack in resources for translation, only English language websites were considered.

The study identified and recorded the following variables in the sample size: links search, site map, consistent main menu and frequently asked questions that were grouped under the dimension of navigation. Registration, personalized content studies/surveys, blogs and site updates were grouped under the dimension of personalized content. Options for large text /graphics, pull down menu, links to additional software, use of visual aids like animation, charts and tables, photographs, videos and/or streaming video, audio and/or streaming audio and pod casts were grouped under the dimension of site accessibility. Contact information, e-mail, snail mail, helpline, cookies, online communities and RSS feeds were all grouped under the dimension of feedback.

This coding scheme is laid on the foundation provided by Stout et al. (2001) in their study of interactive tools on health related websites. The study on interactive tools conducted by Stout et al. (2001) examined nine different dimensions of interactivity including accessibility, navigation, time, personalized content, delivery of message, data entry and use, entertainment, promotions and relationship. These dimensions have been adapted and re-categorized under four dimensions as detailed above. The resulting code scheme gives us 37 items to assess four different dimensions of interactivity. Table 1 illustrates this clearly:

Table 1

The different variables of interactivity and the four broad dimensions under which they are listed for the purpose of this study

---

Dimension	Constituent Feature

Navigation	Internal Links
	External Links
	Search – Website
	Search – World Wide Web
	Advanced search – Website
	Advanced Search – World Wide Web
	Site Map
	Consistent Main Menu
	FAQ
Personalized Content	Registration Process
	Registration for information or data
	Personalized Messages
	Personalized first page
	Input Personal Data
	View Personal Data
	Update Personal Data
	Participate in studies/surveys
	Blog
	Site updates
Site accessibility	Use of large text /graphics option
	Use of pull down menu
	Links to additional software
	Use of visual aids like animation, charts and tables
	Use of photographs
	Use of videos/streaming videos
	Use of streaming audio/audio
	Pod casting
Feedback	Contact – Webmaster
	Contact – Health Professional

Contact - Other web users
Contact – Professional Moderator
E-mail option
Snail mail option
Helpline for counseling
RSS Feeds
Cookies
Online community (Message Boards/Chat rooms)

These features of the websites were categorized according to the characteristics of interactivity laid down by previous research in the field. As discussed earlier in the literature review, user control, synchronicity and two-way communication are the important characteristics of the medium that foster interactivity. The features detailed above are indicative of these characteristics. For example, all the features listed under navigation provide user control and the features listed under feedback provide a sense of two-way communication and synchronicity. However, it must be noted that true synchronous communication as observed in interpersonal communication is not yet possible on a medium like the internet and, as van Dijk (2004) suggests, this is a limitation to true interactivity on the Internet. It must also be noted that due to the lack of resources proper testing of synchronous communication was not possible. However, the features listed provided the possibility of synchronous communication and hence were included in the study. Several of the features listed under site accessibility provide user control. Other features like use of visual aids, video and audio, along with all the features listed under personalized content provide a sense of place for the user, which as Downes and McMillan (2000) suggest is an added characteristic of the interactive process. Some of the features also tend to defy easy categorization and can be classified under more than one dimension. For

example, online community could also provide the user with a sense of place, apart from functioning as a source of feedback. Blogs and site updates could also be considered as a function of feedback apart from being personalized content. For the purpose of this study the features have been categorized as listed above.

Once the sample size of 89 websites was obtained, it was divided among three sets of two coders, ensuring that each website was coded twice to aid in inter-coder reliability. Differences that emerged were resolved by the author coding the website again. To test the second research question, the websites were ranked according to the ranks at which they appeared on respective search engines. For example, if a particular site appeared at # 5 on the Google search engine, the rank accorded to this website was # 5. So, a lower number indicated a higher rank for the website.

Results

Of the 89 Websites coded, only 10 Websites had 50% or more of the interactive features delineated by this study. All of the 89 sites had at least one interactive feature present with "use of large text/graphics" listed under the dimension of site accessibility, not featuring in any of the coded sites. Table 2 summarizes the results.

Table 2

Results – Percentage values of the constituent variables that were found in the sample size

Dimension	Constituent Content/ Interactive Feature	Present in # of sites (out of 89)	%age
Navigation	Internal links	89	100
Feedback	E-mail option	80	89.88

Navigation	External links	79	88.76
Navigation	Consistent main menu	78	87.64
Navigation	Search-Website	63	70.78
Feedback	Snail mail option	57	64.04
Site accessibility	Use of photographs	51	57.3
Site accessibility	Use of visual aids	50	56.17
Feedback	Contact – Webmaster	50	56.17
Feedback	Cookies	46	51.68
Navigation	Site map	42	47.19
Personalized content	Site Updates	40	44.94
Navigation	FAQ	35	39.32
Navigation	Advanced search – Website	27	30.33
Site accessibility	Uses of video/streaming video	24	26.96
Navigation	Use of pull down menu	23	25.84
Personalized content	Input personal data	21	23.59
Feedback	RSS feeds	21	23.59
Site accessibility	Links to additional software	19	21.34
Feedback	Helpline for counseling	19	21.34
Feedback	Contact – Health Professional	14	15.73
Feedback	Online community	14	15.73
Site accessibility	Use of audio/streaming audio	12	13.48
Feedback	Contact – Other web users	11	12.35
Personalized content	View personal data	10	11.23
Personalized content	Update personal data	10	11.23
Feedback	Contact – Professional moderator	9	10.11
Site accessibility	Pod casting	8	8.98
Personalized content	Personalized Messages	7	7.86
Personalized content	Participate in studies/surveys	7	7.86
Navigation	Search – World wide web	6	6.74
Personalized content	Personalized first page	6	6.74

Personalized content	Blog	6	6.74
Personalized content	Registration process	4	4.49
Navigation	Advanced search – website	3	3.37
Site accessibility	Use of large text/graphics option	0	0

The above results provide only a broad overview of the presence of interactive features in websites. Since there are no set standards to measure the levels of interactivity within or among websites, an indicative measure was adopted based on previous research conducted by Stout et al. (2001). This measure is basically an average of the interactive tools and is called the General Interactivity Index (GII). It was calculated by dividing the number of interactive elements present in the websites by the total number of interactive elements being measured (n= 37) (Appendix D). The GII ranged from 0.08 to 0.62 for the 89 websites. Only seven of the 89 websites coded had a GII score of 0.5 or higher, while 17 sites scored between 0.4 to 0.49. A majority of the sites scored between 0.2 to 0.29 (28 sites) and 0.3 to 0.39 (21 sites) with 16 sites scoring between 0.05 to 0.19 falling in the bottom half of the list of coded sites. Therefore, it is clear that while all the sites coded showed some form of interactive elements, the level of interactivity was not very high and varied mostly between the medium to low range.

Similarly, to understand the occurrence of the four dimensions of interactivity as laid out by this study, a Dimensions of Interactivity Index (DII) was created by dividing the number of elements in each website per dimension by the total number of elements measured in each dimension (Appendices E, F, G & H). The results showed that the dimension occurring most frequently in the websites is navigation (average DII = 0.52), followed by feedback (average DII= 0.36), site accessibility (average DII = 0.26) and personalized content (average DII = 0.13).

However, it must be established that the GII and DII calculated are mostly indicative and a measure of comparison between the websites coded and not absolute measures.

As part of the exploratory nature of this study, the second research question sought to determine if there was a relationship between levels of interactivity and the ranking of websites as presented by the search engines. To answer this question the GII was used and compared with the page ranks of the coded websites. A correlation coefficient of -0.275 ($p=0.01$) was found (Spearman's rho) (Appendix J). This indicates a significant, but weak, negative correlation between the interactivity index and the page rank. The complete list of websites and their interactivity score and page rank on search engines is provided in Appendix I.

Discussion

As the results show, features of interactivity, as defined by previous research and the framework of this study, are present in all the sites studied. However, most of these sites do not harness the full potential of interactivity as only a little over 7% of the sites indicated a high level of interactivity. Most (74%) of the sites indicated a medium level of interactivity and a significant amount of websites (a little over 17%) showed low levels of interactivity.

In terms of the different dimensions of interactivity as listed by this study, the websites showed varying results. The features categorized under navigation and feedback appeared more frequently than the features categorized under site accessibility and personalized content. This indicates that most of the websites studied provide a stronger sense of user control and two-way communication than a sense of place. As Downes and McMillan (2000) found in their study of identification of key dimensions of interactivity, conducted through expert interviews, interactivity occurs even when certain dimensions are low. In another study by McMillan (2002)

where she lays down a four-part model of Cyber-interactivity, it was found that perception of interactivity played an important role, even though websites studied showed lower levels of interactivity the perception of interactivity was higher among users. This raises an important limitation of the current study as it looks only at the system-centric dimensions and does not take into account the element of user experience. Future research in the field could investigate this gap.

While the study tested for two-way communication and, as the study shows, the websites indicated a higher level of this characteristic of interactivity, the element of synchronicity was not tested. This was largely due to the lack of resources in testing for time lag in computer-mediated communication. Future research could focus on this area as well, as both van Dijk (2004) and Liu & Shrum (2002) suggest, experienced or perceived synchronicity is linked to structural synchronicity and both are essential for true interactivity, as observed in interpersonal communication, to occur.

To answer the first research question, of whether or not HIV/AIDS awareness and prevention websites use features of interactivity, it was found that they certainly do use these features. However, there is a significant difference in how these websites use these features, as discussed above. The second research question, as part of the exploratory nature of the current study, sought to uncover any link, if present, between the levels of interactivity on a site and ranking of the site on any search engine. A significant, but weak, negative correlation was found between the interactivity index and page rank. According to the result, as the interactivity index of the websites increase, the search engine rank decreases.

This correlation can be explained by the fact that most websites use the strategy of Search Engine Optimization (SEO) to enable a higher rank on search engines. As the concept of interactivity itself is relatively new and a standard definition of the process is yet to be identified, websites today do not use it as guideline during the process of design or implementation. Rather the guiding principles of website design come from a marketing tradition where the concept of SEO plays an important role.

Search engine optimization (SEO) is a process through which websites ensure the maximum probability of their websites showing up high on the search results of any search engine. Sullivan (2007, para 4) suggests "…it means ensuring that your web pages are accessible to search engines and are focused in ways that help improve the chances they will be found." There are several factors that apply to this process including the use of meta-tags, use of frames, use of image maps, proper use of links, use of site map with text links, and more importantly, in relation to page ranking – the use of keywords (Sweeney, 2001). All these factors play an important role in how the particular website is ranked on a search engine and consequently search engine optimization has become an integral part of e-commerce and internet marketing.

Therefore, while the result uncovered by this study on correlation between website rank and the level of interactivity is expected, it is also indicative of the technological functioning of search engines and their ranking processes. As mentioned earlier, SEO plays an important role in how high a particular website is ranked on a particular search engine. Added to this are the processes adopted by the search engines themselves, that include the use of intelligent programs called bots that crawl the Web searching for pages and indexing them based on specific

parameters. Therefore, designers of websites today pay more attention to these factors than interactivity, which is still pretty much in a conceptual stage.

However, interactivity does play an important role in user experience (Downes and McMillan, 2000). Therefore, it is important to explore this concept further, especially in the context of health communication, as more and more users are turning to the Web for their health information needs. Further research in the field could take into account the role of search engines and the process of search engine optimization when trying to understand the process of interactivity on websites.

Due to the lack of resources, this study was limited to HIV/AIDS websites. Future research in the area could include a larger number of sites across different health domains (as opposed to HIV/AIDS alone), and also encompass different language websites from across the world. This is especially important as the rise of HIV/AIDS is most significant in non-English speaking countries, in Asia and Africa. As the current study only looked at system-centric dimensions of interactivity, future research could focus on user-centric dimensions as well. A user-centric approach will also allow researchers to explore the relationship between perceived and actual interactivity. Perceived interactivity is how interactive a user feels the medium is as opposed to how interactive it actually is. This is dependent on several things like page download times, query response, etc. It would be interesting to note any difference in interactivity (perceived or actual) when tested for both user-centric and system-centric dimensions.

As we have seen the websites that were studied showed some element or the other of interactivity, however the range of occurrence varied with a majority of the websites scoring between medium and low ranges. There was also a weak negative correlation found between the

levels of interactivity and page ranks of these websites on search engines. There have been several attempts to define the concept of interactivity. Future researchers need to continue to test for interactivity's relevance and the role it plays in the medium of the Internet – as Rafaeli and Sudweeks (1997) put it – sticky.

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Appendix A: Coder Booklet

Directions: The coder should read the coding booklet prior to coding the Websites. Each variable to be coded is explained. The variables to be coded are grouped under four dimensions of interactivity: navigation, personalized content, site accessibility and feedback. The coding procedure will identify and record the following variables:

a) Under navigation:

- Internal Links – Presence or absence of links that connect to other pages within the Website.
- External Links – Presence or absence of links that connect to pages external to the current Website.
- Search – Website – Presence or absence of a search tool limited to the current Website
- Search – World Wide Web – Presence or absence of a search tool not limited to the current Website but inclusive of the World Wide Web
- Advanced search – Website - Presence or absence of an advanced search tool limited to the current Website
- Advanced Search – World Wide Web - Presence or absence of an advanced search tool not limited to the current Website but inclusive of the World Wide Web
- Site Map – Presence or absence of a Site Map
- Consistent Main Menu – Presence or absence of a main menu that is consistent across pages.
- FAQ – Presence or absence of a section titled Frequently Asked Questions

b) Under Personalized Content

- Registration Process – Indicates the presence or absence of the process where the user has to register to access the site
- Registration for information or data - Indicates the presence or absence of the process where the user has to register only to access certain information on the site
- Personalized Messages – Indicates the presence or absence of personalized messages for the user usually available only after registration.
- Personalized first page – Indicates the presence or absence of a personalized first page for a registered user.
- Input Personal Data – Indicates the availability of forms to input personal data for example a user profile.
- View Personal Data – Indicates the availability of the option to view personal data for example in a user profile.
- Update Personal Data – Indicates the availability of the option to update the current user data that has been uploaded onto the site
- Participate in studies/surveys – Indicates the availability of opportunities to participates in studies or surveys. These could include the simple daily question type of survey or a more complex survey.
- Online community (Message Boards/Chat rooms) – indicates the presence or absence of message boards and/or chat rooms.
- Blog – Indicates the presence or absence of a site blog.
- Site updates – Indicates the option of receiving site updates on a regular basis.

c) Under Site Accessibility

- Use of large text /graphics option – Indicates the option to makes the text or graphics larger or smaller on the current Website as required by the user.
- Use of pull down menu
- Links to additional software – Indicates the presence of links to additional software that may be required to make the contents of the current site more accessible. For example links to Macromedia flash player or Acrobat PDF
- Use of visual aids like animation, charts and tables
- Use of photographs
- Use of videos and/or streaming video
- Use of audio and/or streaming audio

d) Under feedback

- Contact – Webmaster
- Contact – Health Professional - indicates the contact information of a certified professional working in the area or HIV/AIDS counseling, awareness and prevention and is not limited to doctors alone.
- Contact - Other Web users
- Contact – Professional Moderator – indicates the contact information of a moderator in the case or message boards and/or chat room
- E-mail option
- Snail mail option
- Helpline for counseling – Indicates the presence of a dedicated helpline within the current site or a link to a dedicated helpline which may be external to the current site.

Appendix B: Content Codebook

Navigation

Internal Links

0 = absent

1 = present

External Links

0 = absent

1 = present

Search – Website

0 = absent

1 = present

Search – World Wide Web

0 = absent

1 = present

Advanced search – Website

0 = absent

1 = present

Advanced Search – World Wide Web

0 = absent

1 = present

Site Map

0 = absent

1 = present

Consistent Main Menu

0 = absent

1 = present

FAQ

0 = absent

1 = present

Site Accessibility

Large text /graphics option

0 = absent

1 = present

Pull down menu

0 = absent

1 = present

Links to additional software

0 = absent

1 = present

Visual aids like animation, charts and tables

0 = absent

1 = present

Photographs

0 = absent

1 = present

Videos and/or streaming videos

0 = absent

1 = present

Audio and/or streaming audio

0 = absent

1 = present

Feedback

Contact – Webmaster

0 = absent

1 = present

Contact – Health Professional

0 = absent

1 = present

Contact - Other Web users

0 = absent

1 = present

Contact – Professional Moderator

0 = absent

1 = present

E-mail option

0 = absent

1 = present

Snail mail option

0 = absent

1 = present

Helpline for counseling

0 = absent

1 = present

Appendix C: Sources Searched

ABI/Inform Global via Proquest

Databases covered

- ABI Inform; coverage – 1971-present
- American Medical Association; coverage – not specified
- Proquest Newspapers; coverage – not specified
- Research Library; coverage – 1971-present

Academic Search Elite via EBSCO

Databases covered

- Academic Search Elite; coverage – 1985-present
- American Humanities Index; coverage – 1975-present
- Business Source Elite; coverage – 1985-present
- Communication and Mass Media Complete; coverage – not specified

Communication Abstracts

- Coverage – 1966-present

Google Scholar

Keywords

Internet, Websites, public service communication, development communication, Health Communication, Interactivity, HIV/AIDS

Appendix D: General Interactivity Index

Table showing the total number of interactive tools for each Website, total number of interactive tools under the four dimensions, the page rank and the General Interactivity Index (GII) of each Website.

Search Engine	Pg. Rank	Website/URL	Total # of interactive Navigation tools	Total # of interactive Personalized Content tools	Total # of interactive Site Accessibility tools	Total # of interactive Feedback tools	Total # of Interactive tools	General Interactivity Index (# of interactive tools present in the Website/total # of interactive tools being measured)
Yahoo	8	http://www.mccchurch.org/Content/NavigationMenu/Resources/HIVAIDS/HIV_AIDS.htm	6	0	1	4	**11**	**0.29**
AOL	61	http://www.measuredhs.com/hivdata/	3	0	2	2	**7**	**0.18**
MSN	87	http://www.medicinenet.com/human_immunodeficiency_virus_hiv_aids/article.htm	6	1	4	2	**13**	**0.35**
Google	31	http://www.meds.com/hiv/hivindex1.html	4	0	0	3	**7**	**0.18**
Google	43	http://www.metrokc.gov/health/apu/	6	1	3	5	**15**	**0.40**
Google	87	http://www.millenniumcampaign.org/site/pp.asp?c=grKVL2NLE&b=186386	5	7	6	1	**19**	**0.51**
Google	86	http://www.napwa.org/	5	0	3	3	**11**	**0.29**
Yahoo	38	http://www.niaid.nih.gov/factsheets/hivinf.htm	6	0	3	4	**13**	**0.35**
MSN	45	http://www.omhrc.gov/hivaidsobservances/index.html	7	1	3	4	**15**	**0.40**
MSN	53	http://www.openhand.org/pages/srvs_hiv.html	2	1	4	3	**10**	**0.27**
Google	85	http://www.osophs.dhhs.gov/aids/	4	0	2	4	**10**	**0.27**
Ask	30	http://www.pedaids.org	4	6	3	3	**16**	**0.43**

Google	68	http://www.prb.org/template.cfm?template=InterestDisplay.cfm&InterestCategoryID=205	5	1	2	4	**12**	**0.32**
AOL	98	http://www.redcross.org/services/hss/hivaids/afam.html	7	2	1	4	**14**	**0.37**
MSN	48	http://www.rho.org/html/hiv_aids.htm	5	0	0	1	**6**	**0.16**
AOL	67	http://www.shirleys-wellness-cafe.com/aids.htm	4	1	2	0	**7**	**0.18**
Google	42	http://www.statehealthfacts.org/cgi-bin/healthfacts.cgi?action=compare&category=HIV%2FAIDS&welcome=1	6	1	2	3	**12**	**0.32**
Ask	49	http://www.synergyaids.com	4	1	1	3	**9**	**0.24**
Google	1	http://www.thebody.com/	7	5	3	7	**22**	**0.59**
MSN	62	http://www.tooelehealth.org/Community_Health/HIV_AIDS/HIV_AIDS_Main_Page.html	4	0	3	5	**12**	**0.32**
Ask	31	http://www.ucsf.edu/hivcntr/	3	0	3	4	**10**	**0.27**
Yahoo	80	http://www.un.org/Pubs/CyberSchoolBus/aids2003/	4	1	4	5	**14**	**0.37**
Yahoo	11	http://www.undp.org/hiv/	6	0	4	3	**13**	**0.35**
Google	19	http://www.unicef.org/aids/	6	1	5	5	**17**	**0.45**
AOL	68	http://www.utopia-asia.com/aids.htm	3	5	2	5	**15**	**0.40**
AOL	82	http://www.virology.net/ATVHIVGlossary.html	5	0	0	3	**8**	**0.21**
Yahoo	25	http://www.Webmd.com/diseases_and_conditions/hiv_aids.htm	5	5	4	5	**19**	**0.51**
AOL	51	http://www.whitehouse.gov/infocus/hivaids/	6	2	4	5	**17**	**0.45**
Yahoo	7	http://www.who.int/hiv/en/	7	0	3	4	**14**	**0.37**
MSN	31	http://aids.about.com/	6	3	2	2	**13**	**0.35**
Yahoo	10	http://aidsinfo.nih.gov/	6	2	1	5	**14**	**0.37**
AOL	55	http://allafrica.com/aids/	3	0	1	4	**8**	**0.21**
AOL	79	http://dhfs.wisconsin.gov/aids-hiv/	5	0	4	4	**13**	**0.35**
AOL	58	http://familydoctor.org/005.xml	5	0	2	4	**11**	**0.29**
Yahoo	36	http://health.yahoo.com/topic/hiv	7	5	2	7	**21**	**0.56**
Google	5	http://hivinsite.ucsf.edu/	6	3	2	4	**15**	**0.40**

Google	14	http://hrw.org/doc/?t=hivaids&document_limit=0,2	7	1	3	5	**16**	**0.43**
Yahoo	10	http://medicalcenter.osu.edu/patientcare/healthinformation/diseasesandconditions/infectious/aids/	6	0	4	2	**12**	**0.32**
Yahoo	91	http://psychology.ucdavis.edu/rainbow/html/aids.html	0	0	1	4	**14**	**0.37**
Ask	6	http://sis.nlm.nih.gov/hiv.html	6	0	1	2	**9**	**0.24**
Google	52	http://t8Web.lanl.gov/people/rajan/AIDS-india/	2	1	0	2	**5**	**0.13**
MSN	2	http://usinfo.state.gov/gi/global_issues/hiv_aids.html	7	1	2	4	**14**	**0.37**
MSN	78	http://wdh.state.wy.us/AIDS/ryan.htm	3	0	0	3	**6**	**0.16**
MSN	17	http://Web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTHIVAIDS/0,,menuPK:376477~pagePK:149018~piPK:149093~theSitePK:376471,00.html	6	0	5	5	**16**	**0.43**
Ask	88	http://womenandaids.unaids.org/	4	1	2	3	**10**	**0.27**
Google	25	http://www.aclu.org/hiv/index.html	6	2	5	5	**18**	**0.48**
Ask	89	http://www.ahrq.gov/data/hivnet.htm	2	0	0	3	**5**	**0.13**
MSN	8	http://www.aids.org/	4	1	1	1	**7**	**0.18**
Ask	18	http://www.aidsalliance.org	7	2	1	2	**12**	**0.32**
Ask	76	http://www.womenhiv.org/	3	0	0	3	**6**	**0.16**
Ask	97	http://www.aidslifecycle.org/	5	1	2	5	**13**	**0.35**
Google	41	http://www.aidsnyc.org/	4	0	0	3	**7**	**0.18**
MSN	54	http://www.aidsquilt.org/hivaidsstatistics.htm	4	1	2	4	**11**	**0.29**
Ask	94	http://www.aidssida.cpha.ca/	3	0	3	3	**9**	**0.24**
Google	78	http://www.ama-assn.org/ama/pub/category/1944.html	5	5	2	3	**15**	**0.40**
AOL	30	http://www.amfar.org/cgi-bin/iowa/index.html	4	1	2	3	**10**	**0.27**
Yahoo	66	http://www.apha.org/public_health/aids.htm	4	0	2	2	**8**	**0.21**
AOL	96	http://www.apicha.org/apicha/main.html	2	0	3	2	**7**	**0.18**

Ask	73	http://www.arkofrefuge.org/	2	0	2	2	**6**	**0.16**
Yahoo	34	http://www.ashastd.org/learn/learn_hiv_aids_overview.cfm	6	1	0	8	**15**	**0.40**
Ask	37	http://www.balmingilead.org/about/about.asp	3	4	5	7	**19**	**0.51**
MSN	92	http://www.basnyc.org/hiv_aids.htm	3	0	2	3	**8**	**0.21**
Ask	38	http://www.brta-lrta.org/	6	0	4	4	**14**	**0.37**
MSN	5	http://www.cdc.gov/hiv/resources/qa/index.htm	6	3	2	3	**14**	**0.37**
MSN	43	http://www.census.gov/ipc/www/hivaidsn.html	2	0	1	2	**5**	**0.13**
AOL	65	http://www.champnetwork.org/	2	0	2	2	**6**	**0.16**
Yahoo	81	http://www.cln.org/themes/aids.html	2	0	0	1	**3**	**0.08**
Yahoo	78	http://www.comminit.com/hivaids/	5	3	1	7	**16**	**0.43**
AOL	93	http://www.conferencealerts.com/aids.htm	4	1	0	1	**6**	**0.16**
MSN	82	http://www.crs.org/our_work/what_we_do/programming_areas/aids/index.cfm	4	2	4	2	**12**	**0.32**
Google	75	http://www.doh.state.fl.us/Disease_ctrl/aids/index.html	4	0	1	4	**9**	**0.24**
MSN	38	http://www.drugs.com/aids.html	8	7	2	5	**23**	**0.62**
Google	59	http://www.duesberg.com/index.html	7	0	1	2	**10**	**0.27**
Google	46	http://www.eldis.org/hivaids/	5	2	2	1	**10**	**0.27**
Yahoo	8	http://www.emedicinehealth.com/hivaids/article_em.htm	5	2	0	4	**11**	**0.27**
Yahoo	22	http://www.fda.gov/oashi/aids/hiv.html	6	1	0	4	**11**	**0.29**
Google	49	http://www.genderandaids.org/	6	6	1	3	**16**	**0.43**
Ask	58	http://www.healingourspirit.org	3	0	1	5	**9**	**0.24**
Google	51	http://www.health24.com/medical/Condition_centres/777-792-814.asp	7	1	3	9	**20**	**0.54**
MSN	66	http://www.helpfighthiv.org/	3	0	2	4	**9**	**0.24**
MSN	86	http://www.hivplus.com/	4	5	0	3	**12**	**0.32**
AOL	73	http://www.hivtest.org/	5	0	2	4	**11**	**0.29**

MSN	60	http://www.hrw.org/doc/?t=hivaids&document_limit=0,2	6	2	4	5	**17**	**0.45**
MSN	24	http://www.idph.state.il.us/aids/default.htm	3	0	1	4	**8**	**0.21**
AOL	29	http://www.kaisernetwork.org/Daily_reports/rep_hiv.cfm	6	2	3	6	**17**	**0.45**
Yahoo	86	http://www.kff.org/hivaids/index.cfm	5	2	4	7	**18**	**0.48**
AOL	71	http://www.kidshealth.org/parent/infections/std/hiv.html	6	2	2	1	**11**	**0.29**
AOL	12	http://www.knowhivaids.org	5	2	1	1	**9**	**0.24**
Ask	79	http://www.leagueagainstaids.com/	3	0	2	4	**9**	**0.24**

Appendix E: Dimension of Interactivity Index (for Navigation)

Table showing the total number of interactive navigation tools for each Website, the page rank, the Dimension of Interactivity Index (DII) of each Website and the average DII for navigation at the bottom.

Search Engine	Pg. Rank	URL	Internal Links	External Links	Search-Website	Search World Wide Web	Advanced Search - Website	Advanced Search - World Wide Web	Site Map	Consistent Main Menu	FAQ	Total	Website/ Total number of tools measured	Dimension of Interactivity Index (DII) – Total number of tools present per
Yahoo	68	http://www.mccchurch.org/Content/NavigationMenu/Resources/HIVAIDS/HIV_AIDS.htm	1	1	1	0	1	0	1	1	0	**6**		**0.66**
AOL	61	http://www.measuredhs.com/hivdata/	1	1	0	0	0	0	0	1	0	**3**		**0.33**
MSN	87	http://www.medicinenet.com/human_immunodeficiency_virus_hiv_aids/article.htm	1	1	1	0	0	0	1	1	1	**6**		**0.66**
Google	31	http://www.meds.com/hiv/hivindex1.html	1	1	1	0	0	0	0	1	0	**4**		**0.44**
Google	43	http://www.metrokc.gov/health/apu/	1	1	1	1	1	0	0	1	0	**6**		**0.66**
Google	87	http://www.millenniumcampaign.org/site/pp.asp?c=grKVL2NLE&b=186386	1	1	1	0	1	0	1	0	0	**5**		**0.55**
Google	86	http://www.napwa.org/	1	1	0	0	0	0	1	1	1	**5**		**0.55**
Yahoo	38	http://www.niaid.nih.gov/factsheets/hivinf.htm	1	1	1	0	1	0	1	1	0	**6**		**0.66**
MSN	45	http://www.omhrc.gov/hivaidsobservances/index.html	1	1	1	0	1	0	1	1	1	**7**		**0.77**
MSN	53	http://www.openhand.org/pages/srvs_hiv.html	1	0	0	0	0	0	0	1	0	**2**		**0.22**

Google	85	http://www.osophs.dhhs.gov/aids/	1	1	1	0	0	0	1	0	0	**4**	**0.44**
Ask	30	http://www.pedaids.org	1	1	1	0	0	0	0	1	0	**4**	**0.44**
Google	68	http://www.prb.org/template.cfm?template=InterestDisplay.cfm&InterestCategoryID=205	1	1	1	0	0	0	1	1	0	**5**	**0.55**
AOL	98	http://www.redcross.org/services/hss/hivaids/afam.html	1	1	1	0	1	0	1	1	1	**7**	**0.77**
MSN	48	http://www.rho.org/html/hiv_aids.htm	1	1	1	0	0	0	1	1	0	**5**	**0.55**
AOL	67	http://www.shirleys-wellness-cafe.com/aids.htm	1	0	1	1	0	0	1	0	0	**4**	**0.44**
Google	42	http://www.statehealthfacts.org/cgi-bin/healthfacts.cgi?action=compare&category=HIV%2FAIDS&welcome=1	1	1	1	0	0	0	1	1	1	**6**	**0.66**
Ask	49	http://www.synergyaids.com	1	1	1	0	0	0	0	1	0	**4**	**0.44**
Google	1	http://www.thebody.com/	1	1	1	0	1	0	1	1	1	**7**	**0.77**
MSN	62	http://www.tooelehealth.org/Community_Health/HIV_AIDS/HIV_AIDS_Main_Page.html	1	0	1	0	0	0	1	1	0	**4**	**0.44**
Ask	31	http://www.ucsf.edu/hivcntr/	1	1	0	0	0	0	0	1	0	**3**	**0.33**
Yahoo	80	http://www.un.org/Pubs/CyberSchoolBus/aids2003/	1	1	1	0	0	0	0	0	1	**4**	**0.44**
Yahoo	11	http://www.undp.org/hiv/	1	1	1	0	1	0	0	1	1	**6**	**0.66**
Google	19	http://www.unicef.org/aids/	1	1	1	0	1	0	0	1	1	**6**	**0.66**
AOL	68	http://www.utopia-asia.com/aids.htm	1	1	0	0	0	0	0	1	0	**3**	**0.33**
AOL	82	http://www.virology.net/ATVHIVGlossary.html	1	1	1	0	1	0	0	0	1	**5**	**0.55**
Yahoo	25	http://www.Webmd.com/diseases_and_conditions/hiv_aids.htm	1	1	1	0	0	0	1	1	0	**5**	**0.55**
AOL	51	http://www.whitehouse.gov/infocus/hivaids/	1	0	1	0	1	0	1	1	1	**6**	**0.66**
Yahoo	7	http://www.who.int/hiv/en/	1	1	1	0	1	0	1	1	1	**7**	**0.77**

MSN	31	http://aids.about.com/	1	1	1	0	0	0	1	1	1	**6**	**0.66**
Yahoo	10	http://aidsinfo.nih.gov/	1	1	1	0	0	0	1	1	1	**6**	**0.66**
AOL	55	http://allafrica.com/aids/	1	1	0	0	0	0	0	1	0	**3**	**0.33**
AOL	79	http://dhfs.wisconsin.gov/aids-hiv/	1	1	1	0	0	0	1	0	1	**5**	**0.55**
AOL	58	http://familydoctor.org/005.xml	1	1	1	0	1	0	0	1	0	**5**	**0.55**
Yahoo	36	http://health.yahoo.com/topic/hiv	1	1	1	1	0	0	1	1	1	**7**	**0.77**
Google	5	http://hivinsite.ucsf.edu/	1	1	1	0	0	0	1	1	1	**6**	**0.66**
Google	14	http://hrw.org/doc/?t=hivaids&document_limit=0,2	1	1	1	0	1	0	1	1	1	**7**	**0.77**
Yahoo	100	http://medicalcenter.osu.edu/patientcare/healthinformation/diseasesandconditions/infectious/aids/	1	1	1	0	0	0	1	1	1	**6**	**0.66**
Yahoo	91	http://psychology.ucdavis.edu/rainbow/html/aids.html	1	1	0	0	0	0	1	0	0	**3**	**0.33**
Ask	6	http://sis.nlm.nih.gov/hiv.html	1	1	1	0	0	0	1	1	1	**6**	**0.66**
Google	52	http://t8Web.lanl.gov/people/rajan/AIDS-india/	1	1	0	0	0	0	0	0	0	**2**	**0.22**
MSN	2	http://usinfo.state.gov/gi/global_issues/hiv_aids.html	1	1	1	0	1	0	1	1	1	**7**	**0.77**
MSN	78	http://wdh.state.wy.us/AIDS/ryan.htm	1	1	0	0	0	0	0	1	0	**3**	**0.33**
MSN	17	http://Web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTHIVAIDS/0,,menuPK:376477~pagePK:149018~piPK:149093~theSitePK:376471,00.html	1	1	1	0	0	0	1	1	1	**6**	**0.66**
Ask	88	http://womenandaids.unaids.org/	1	1	0	0	0	0	1	1	0	**4**	**0.44**
Google	25	http://www.aclu.org/hiv/index.html	1	1	1	0	1	0	0	1	1	**6**	**0.66**
Ask	89	http://www.ahrq.gov/data/hivnet.htm	1	1	0	0	0	0	0	0	0	**2**	**0.22**
MSN	8	http://www.aids.org/	1	1	1	0	0	0	0	1	0	**4**	**0.44**
Ask	18	http://www.aidsalliance.org	1	1	1	0	1	0	1	1	1	**7**	**0.77**

Ask	76	http://www.womenhiv.org/	1	1	0	0	0	0	0	1	0	**3**	**0.33**
Ask	97	http://www.aidslifecycle.org/	1	1	1	0	0	0	0	1	1	**5**	**0.55**
Google	41	http://www.aidsnyc.org/	1	1	0	0	0	0	0	1	1	**4**	**0.44**
MSN	54	http://www.aidsquilt.org/hivaidsstatistics.htm	1	1	1	0	0	0	0	1	0	**4**	**0.44**
Ask	94	http://www.aidssida.cpha.ca/	1	0	0	0	0	0	1	1	0	**3**	**0.33**
Google	78	http://www.ama-assn.org/ama/pub/category/1944.html	1	1	1	0	0	0	1	1	0	**5**	**0.55**
AOL	30	http://www.amfar.org/cgi-bin/iowa/index.html	1	1	1	0	0	0	0	1	0	**4**	**0.44**
Yahoo	66	http://www.apha.org/public_health/aids.htm	1	1	1	0	0	0	0	1	0	**4**	**0.44**
AOL	96	http://www.apicha.org/apicha/main.html	1	0	0	0	0	0	0	1	0	**2**	**0.22**
Ask	73	http://www.arkofrefuge.org/	1	0	0	0	0	0	0	1	0	**2**	**0.22**
Yahoo	34	http://www.ashastd.org/learn/learn_hiv_aids_overview.cfm	1	1	1	0	0	0	1	1	1	**6**	**0.66**
Ask	37	http://www.balmingilead.org/about/about.asp	1	1	0	0	0	0	0	1	0	**3**	**0.33**
MSN	92	http://www.basnyc.org/hiv_aids.htm	1	1	0	0	0	0	0	1	0	**3**	**0.33**
Ask	38	http://www.brta-lrta.org/	1	1	1	0	0	0	1	1	1	**6**	**0.66**
MSN	5	http://www.cdc.gov/hiv/resources/qa/index.htm	1	1	1	0	0	0	1	1	1	**6**	**0.66**
MSN	43	http://www.census.gov/ipc/www/hivaidsn.html	1	1	0	0	0	0	0	0	0	**2**	**0.22**
AOL	65	http://www.champnetwork.org/	1	0	0	0	0	0	0	1	0	**2**	**0.22**
Yahoo	81	http://www.cln.org/themes/aids.html	1	1	0	0	0	0	0	0	0	**2**	**0.22**
Yahoo	78	http://www.comminit.com/hivaids/	1	1	1	0	0	0	0	1	1	**5**	**0.55**
AOL	93	http://www.conferencealerts.com/aids.htm	1	0	1	0	1	0	0	1	0	**4**	**0.44**
MSN	82	http://www.crs.org/our_work/what_we_do/programming_areas/aids/index.cfm	1	0	1	0	0	0	1	1	0	**4**	**0.44**

Google	75	http://www.doh.state.fl.us/Disease_ctrl/aids/index.html	1	1	1	0	0	0	0	1	0	**4**	**0.44**
MSN	38	http://www.drugs.com/aids.html	1	1	1	1	1	1	0	1	1	**8**	**0.88**
Google	59	http://www.duesberg.com/index.html	1	1	1	1	0	1	0	1	1	**7**	**0.77**
Google	46	http://www.eldis.org/hivaids/	1	1	1	0	1	0	0	1	0	**5**	**0.55**
Yahoo	8	http://www.emedicinehealth.com/hivaids/article_em.htm	1	1	1	0	0	0	1	1	0	**5**	**0.55**
Yahoo	22	http://www.fda.gov/oashi/aids/hiv.html	1	1	1	0	1	0	1	1	0	**6**	**0.66**
Google	49	http://www.genderandaids.org/	1	1	1	0	1	0	1	1	0	**6**	**0.66**
Ask	58	http://www.healingourspirit.org	1	1	0	0	0	0	0	1	0	**3**	**0.33**
Google	51	http://www.health24.com/medical/Condition_centres/777-792-814.asp	1	1	1	1	1	1	0	1	0	**7**	**0.77**
MSN	66	http://www.helpfighthiv.org/	1	1	0	0	0	0	0	1	0	**3**	**0.33**
MSN	86	http://www.hivplus.com/	1	1	1	0	0	0	0	1	0	**4**	**0.44**
AOL	73	http://www.hivtest.org/	1	1	0	0	0	0	1	1	1	**5**	**0.55**
MSN	60	http://www.hrw.org/doc/?t=hivaids&document_limit=0,2	1	1	1	0	1	0	1	1	0	**6**	**0.66**
MSN	24	http://www.idph.state.il.us/aids/default.htm	1	1	0	0	0	0	0	1	0	**3**	**0.33**
AOL	29	http://www.kaisernetwork.org/Daily_reports/rep_hiv.cfm	1	1	1	0	1	0	1	1	0	**6**	**0.66**
Yahoo	86	http://www.kff.org/hivaids/index.cfm	1	1	1	0	1	0	0	1	0	**5**	**0.55**
AOL	71	http://www.kidshealth.org/parent/infections/std/hiv.html	1	1	1	0	1	0	0	1	1	**6**	**0.66**
AOL	12	http://www.knowhivaids.org	1	1	1	0	0	0	0	1	1	**5**	**0.55**
Ask	79	http://www.leagueagainstaids.com/	1	1	0	0	0	0	0	1	0	**3**	**0.33**

Average DII (for Navigation): 0.521573034

Appendix F: Dimension of Interactivity Index (for Personalized Content)

Table showing the total number of interactive personalized content tools for each Website, the page rank, the Dimension of Interactivity Index (DII) of each Website and the average DII for personalized content at the bottom.

Search Engine	Pg. Rank	URL	Registration Process	Registration for information or data	Personalized messages	Personalized first page	Input personal data	View personal data	Update personal data	Participate in studies/surveys	Blog	Site updates	Total	Dimension of Interactivity Index (DII) - Total number of tools present per Website/ Total number of tools measured
Yahoo	68	http://www.mccchurch.org/Content/NavigationMenu/Resources/HIVAIDS/HIV_AIDS.htm	0	0	0	0	0	0	0	0	0	0	**0**	**0**
AOL	61	http://www.measuredhs.com/hivdata/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
MSN	87	http://www.medicinenet.com/human_immunodeficiency_virus_hiv_aids/article.htm	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
Google	31	http://www.meds.com/hiv/hivindex1.html	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Google	43	http://www.metrokc.gov/health/apu/	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
Google	87	http://www.millenniumcampaign.org/site/pp.asp?c=grKVL2NLE&b=186386	0	1	1	0	1	1	1	1	0	1	**7**	**0.7**
Google	86	http://www.napwa.org/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Yahoo	38	http://www.niaid.nih.gov/factsheets/hivinf.htm	0	0	0	0	0	0	0	0	0	0	**0**	**0**
MSN	45	http://www.omhrc.gov/hivaidsobservances/index.html	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
MSN	53	http://www.openhand.org/pages/srvs_hiv.html	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
Google	85	http://www.osophs.dhhs.gov/aids/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Ask	30	http://www.pedaids.org	0	1	0	0	1	1	1	0	1	1	**6**	**0.6**

Google	68	http://www.prb.org/template.cfm?template=InterestDisplay.cfm&InterestCategoryID=205	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
AOL	98	http://www.redcross.org/services/hss/hivaids/afam.html	0	1	0	0	0	0	0	0	0	1	**2**	**0.2**
MSN	48	http://www.rho.org/html/hiv_aids.htm	0	0	0	0	0	0	0	0	0	0	**0**	**0**
AOL	67	http://www.shirleys-wellness-cafe.com/aids.htm	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
Google	42	http://www.statehealthfacts.org/cgi-bin/healthfacts.cgi?action=compare&category=HIV%2FAIDS&welcome=1	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
Ask	49	http://www.synergyaids.com	0	0	0	0	1	0	0	0	0	0	**1**	**0.1**
Google	1	http://www.thebody.com/	0	0	0	0	1	1	1	1	0	1	**5**	**0.5**
MSN	62	http://www.tooelehealth.org/Community_Health/HIV_AIDS/HIV_AIDS_Main_Page.html	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Ask	31	http://www.ucsf.edu/hivcntr/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Yahoo	80	http://www.un.org/Pubs/CyberSchoolBus/aids2003/	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
Yahoo	11	http://www.undp.org/hiv/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Google	19	http://www.unicef.org/aids/	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
AOL	68	http://www.utopia-asia.com/aids.htm	0	0	1	1	1	1	1	0	0	0	**5**	**0.5**
AOL	82	http://www.virology.net/ATVHIVGlossary.html	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Yahoo	25	http://www.Webmd.com/diseases_and_conditions/hiv_aids.htm	0	0	0	0	1	1	1	1	0	1	**5**	**0.5**
AOL	51	http://www.whitehouse.gov/infocus/hivaids/	0	0	0	0	1	0	0	0	0	1	**2**	**0.2**
Yahoo	7	http://www.who.int/hiv/en/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
MSN	31	http://aids.about.com/	0	1	0	0	1	0	0	0	0	1	**3**	**0.3**
Yahoo	10	http://aidsinfo.nih.gov/	0	0	0	0	0	0	0	1	0	1	**2**	**0.2**
AOL	55	http://allafrica.com/aids/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
AOL	79	http://dhfs.wisconsin.gov/aids-hiv/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
AOL	58	http://familydoctor.org/005.xml	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Yahoo	36	http://health.yahoo.com/topic/hiv	0	0	1	1	1	1	1	0	0	0	**5**	**0.5**
Google	5	http://hivinsite.ucsf.edu/	0	0	0	0	1	0	0	1	0	1	**3**	**0.3**
Google	14	http://hrw.org/doc/?t=hivaids&document_limit=0,2	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
Yahoo	100	http://medicalcenter.osu.edu/patientcare/healthinformation/diseasesandconditions/infectious/aids/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Yahoo	91	http://psychology.ucdavis.edu/rainbow/html/aids.html	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Ask	6	http://sis.nlm.nih.gov/hiv.html	0	0	0	0	0	0	0	0	0	0	**0**	**0**

Google	52	http://t8Web.lanl.gov/people/rajan/AIDS-india/	0	0	0	0	0	0	0	1	0	0	**1**	**0.1**
MSN	2	http://usinfo.state.gov/gi/global_issues/hiv_aids.html	0	1	0	0	0	0	0	0	0	0	**1**	**0.1**
MSN	78	http://wdh.state.wy.us/AIDS/ryan.htm	0	0	0	0	0	0	0	0	0	0	**0**	**0**
MSN	17	http://Web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTHIVAIDS/0,,menuPK:376477~pagePK:149018~piPK:149093~theSitePK:376471,00.html	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Ask	88	http://womenandaids.unaids.org/	0	0	0	0	1	0	0	0	0	0	**1**	**0.1**
Google	25	http://www.aclu.org/hiv/index.html	0	1	0	0	0	0	0	0	0	1	**2**	**0.2**
Ask	89	http://www.ahrq.gov/data/hivnet.htm	0	0	0	0	0	0	0	0	0	0	**0**	**0**
MSN	8	http://www.aids.org/	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
Ask	18	http://www.aidsalliance.org	0	1	0	0	0	0	0	0	0	1	**2**	**0.2**
Ask	76	http://www.womenhiv.org/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Ask	97	http://www.aidslifecycle.org/	0	1	0	0	0	0	0	0	0	0	**1**	**0.1**
Google	41	http://www.aidsnyc.org/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
MSN	54	http://www.aidsquilt.org/hivaidsstatistics.htm	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
Ask	94	http://www.aidssida.cpha.ca/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Google	78	http://www.ama-assn.org/ama/pub/category/1944.html	0	1	0	0	1	1	1	0	0	1	**5**	**0.5**
AOL	30	http://www.amfar.org/cgi-bin/iowa/index.html	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
Yahoo	66	http://www.apha.org/public_health/aids.htm	0	0	0	0	0	0	0	0	0	0	**0**	**0**
AOL	96	http://www.apicha.org/apicha/main.html	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Ask	73	http://www.arkofrefuge.org/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Yahoo	34	http://www.ashastd.org/learn/learn_hiv_aids_overview.cfm	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
Ask	37	http://www.balmingilead.org/about/about.asp	1	0	1	1	0	0	0	0	0	1	**4**	**0.4**
MSN	92	http://www.basnyc.org/hiv_aids.htm	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Ask	38	http://www.brta-lrta.org/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
MSN	5	http://www.cdc.gov/hiv/resources/qa/index.htm	0	0	0	0	0	0	0	1	1	1	**3**	**0.3**
MSN	43	http://www.census.gov/ipc/www/hivaidsn.html	0	0	0	0	0	0	0	0	0	0	**0**	**0**
AOL	65	http://www.champnetwork.org/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Yahoo	81	http://www.cln.org/themes/aids.html	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Yahoo	78	http://www.comminit.com/hivaid	0	0	0	0	1	0	0	0	1	1	**3**	**0.3**

		s/												
AOL	93	http://www.conferencealerts.com/aids.htm	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
MSN	82	http://www.crs.org/our_work/what_we_do/programming_areas/aids/index.cfm	0	0	0	0	1	0	0	0	0	1	**2**	**0.2**
Google	75	http://www.doh.state.fl.us/Disease_ctrl/aids/index.html	0	0	0	0	0	0	0	0	0	0	**0**	**0**
MSN	38	http://www.drugs.com/aids.html	1	0	1	1	1	1	1	0	0	1	**7**	**0.7**
Google	59	http://www.duesberg.com/index.html	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Google	46	http://www.eldis.org/hivaids/	0	0	0	0	1	0	0	0	0	1	**2**	**0.2**
Yahoo	8	http://www.emedicinehealth.com/hivaids/article_em.htm	0	0	0	0	1	0	0	0	0	1	**2**	**0.2**
Yahoo	22	http://www.fda.gov/oashi/aids/hiv.html	0	0	0	0	0	0	0	0	0	1	**1**	**0.1**
Google	49	http://www.genderandaids.org/	1	0	1	1	0	1	1	0	1	0	**6**	**0.6**
Ask	58	http://www.healingourspirit.org	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Google	51	http://www.health24.com/medical/Condition_centres/777-792-814.asp	0	0	0	0	0	0	0	0	1	0	**1**	**0.1**
MSN	66	http://www.helpfighthiv.org/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
MSN	86	http://www.hivplus.com/	1	0	1	1	0	1	1	0	0	0	**5**	**0.5**
AOL	73	http://www.hivtest.org/	0	0	0	0	0	0	0	0	0	0	**0**	**0**
MSN	60	http://www.hrw.org/doc/?t=hivaids&document_limit=0,2	0	0	0	0	0	0	0	0	1	1	**2**	**0.2**
MSN	24	http://www.idph.state.il.us/aids/default.htm	0	0	0	0	0	0	0	0	0	0	**0**	**0**
AOL	29	http://www.kaisernetwork.org/Daily_reports/rep_hiv.cfm	0	0	0	0	1	0	0	0	0	1	**2**	**0.2**
Yahoo	86	http://www.kff.org/hivaids/index.cfm	0	0	0	0	1	0	0	0	0	1	**2**	**0.2**
AOL	71	http://www.kidshealth.org/parent/infections/std/hiv.html	0	0	0	0	1	0	0	0	0	1	**2**	**0.2**
AOL	12	http://www.knowhivaids.org	0	0	0	0	1	0	0	0	0	1	**2**	**0.2**
Ask	79	http://www.leagueagainstaids.com/	0	0	0	0	0	0	0	0	0	0	**0**	**0**

Average DII (for Personalized Content): 0.134831461

Appendix G: Dimension of Interactivity Index (for Site Accessibility)

Table showing the total number of interactive site accessibility tools for each Website, the page rank, the Dimension of Interactivity Index (DII) of each Website and the average DII for site accessibility at the bottom.

Search Engine	Pg. Rank	URL	Use of large text graphics options	Use of pull down menu	Links to additional software	Visual aids like animation, charts, graphics and tables	Photographs	Video/streaming video	Audio/streaming audio	Pod casting	Total	Dimension of Interactivity Index (DII) - Total number of tools present per Website/ Total number of tools measured
Yahoo	68	http://www.mccchurch.org/Content/NavigationMenu/Resources/HIVAIDS/HIV_AIDS.htm	0	0	0	0	1	0	0	0	**1**	**0.125**
AOL	61	http://www.measuredhs.com/hivdata/	0	1	0	1	0	0	0	0	**2**	**0.25**
MSN	87	http://www.medicinenet.com/human_immunodeficiency_virus_hiv_aids/article.htm	0	1	0	0	1	1	0	1	**4**	**0.5**
Google	31	http://www.meds.com/hiv/hivindex1.html	0	0	0	0	0	0	0	0	**0**	**0**
Google	43	http://www.metrokc.gov/health/apu/	0	0	1	1	1	0	0	0	**3**	**0.375**
Google	87	http://www.millenniumcampaign.org/site/pp.asp?c=grKVL2NLE&b=186386	0	1	1	1	1	1	1	0	**6**	**0.75**
Google	86	http://www.napwa.org/	0	1	0	1	1	0	0	0	**3**	**0.375**
Yahoo	38	http://www.niaid.nih.gov/factsheets/hivinf.htm	0	1	1	0	1	0	0	0	**3**	**0.375**
MSN	45	http://www.omhrc.gov/hivaidsobservances/index.html	0	1	0	1	1	0	0	0	**3**	**0.375**

MSN	53	http://www.openhand.org/pages/srvs_hiv.html	0	0	1	1	1	1	0	0	**4**	**0.5**
Google	85	http://www.osophs.dhhs.gov/aids/	0	1	0	0	1	0	0	0	**2**	**0.25**
Ask	30	http://www.pedaids.org	0	1	0	1	1	0	0	0	**3**	**0.375**
Google	68	http://www.prb.org/template.cfm?template=InterestDisplay.cfm&InterestCategoryID=205	0	1	0	1	0	0	0	0	**2**	**0.25**
AOL	98	http://www.redcross.org/services/hss/hivaids/afam.html	0	0	0	0	1	0	0	0	**1**	**0.125**
MSN	48	http://www.rho.org/html/hiv_aids.htm	0	0	0	0	0	0	0	0	**0**	**0**
AOL	67	http://www.shirleys-wellness-cafe.com/aids.htm	0	0	0	1	0	1	0	0	**2**	**0.25**
Google	42	http://www.statehealthfacts.org/cgi-bin/healthfacts.cgi?action=compare&category=HIV%2FAIDS&welcome=1	0	1	0	1	0	0	0	0	**2**	**0.25**
Ask	49	http://www.synergyaids.com	0	0	0	1	0	0	0	0	**1**	**0.125**
Google	1	http://www.thebody.com/	0	1	0	1	1	0	0	0	**3**	**0.375**
MSN	62	http://www.tooelehealth.org/Community_Health/HIV_AIDS/HIV_AIDS_Main_Page.html	0	1	0	1	1	0	0	0	**3**	**0.375**
Ask	31	http://www.ucsf.edu/hivcntr/	0	1	1	1	0	0	0	0	**3**	**0.375**
Yahoo	80	http://www.un.org/Pubs/CyberSchoolBus/aids2003/	0	0	1	1	1	1	0	0	**4**	**0.5**
Yahoo	11	http://www.undp.org/hiv/	0	1	0	1	1	1	0	0	**4**	**0.5**
Google	19	http://www.unicef.org/aids/	0	0	0	1	1	1	1	1	**5**	**0.625**
AOL	68	http://www.utopia-asia.com/aids.htm	0	0	0	1	1	0	0	0	**2**	**0.25**
AOL	82	http://www.virology.net/ATVHIVGlossary.html	0	0	0	0	0	0	0	0	**0**	**0**
Yahoo	25	http://www.Webmd.com/diseases_and_conditions/hiv_aids.htm	0	1	0	1	1	1	0	0	**4**	**0.5**

AOL	51	http://www.whitehouse.gov/infocus/hivaids/	0	0	0	1	1	1	1	0	**4**	**0.5**
Yahoo	7	http://www.who.int/hiv/en/	0	0	0	1	1	1	0	0	**3**	**0.375**
MSN	31	http://aids.about.com/	0	0	0	1	1	0	0	0	**2**	**0.25**
Yahoo	10	http://aidsinfo.nih.gov/	0	0	0	0	1	0	0	0	**1**	**0.125**
AOL	55	http://allafrica.com/aids/	0	0	0	0	1	0	0	0	**1**	**0.125**
AOL	79	http://dhfs.wisconsin.gov/aids-hiv/	0	0	1	1	0	1	1	0	**4**	**0.5**
AOL	58	http://familydoctor.org/005.xml	0	0	0	1	1	0	0	0	**2**	**0.25**
Yahoo	36	http://health.yahoo.com/topic/hiv	0	1	0	1	0	0	0	0	**2**	**0.25**
Google	5	http://hivinsite.ucsf.edu/	0	1	0	0	0	0	1	0	**2**	**0.25**
Google	14	http://hrw.org/doc/?t=hivaids&document_limit=0,2	0	0	0	0	0	1	1	1	**3**	**0.375**
Yahoo	100	http://medicalcenter.osu.edu/patientcare/healthinformation/diseasesandconditions/infectious/aids/	0	1	0	1	1	1	0	0	**4**	**0.5**
Yahoo	91	http://psychology.ucdavis.edu/rainbow/html/aids.html	0	0	0	1	0	0	0	0	**1**	**0.125**
Ask	6	http://sis.nlm.nih.gov/hiv.html	0	0	0	0	1	0	0	0	**1**	**0.125**
Google	52	http://t8Web.lanl.gov/people/rajan/AIDS-india/	0	0	0	0	0	0	0	0	**0**	**0**
MSN	2	http://usinfo.state.gov/gi/global_issues/hiv_aids.html	0	0	0	0	1	1	0	0	**2**	**0.25**
MSN	78	http://wdh.state.wy.us/AIDS/ryan.htm	0	0	0	0	0	0	0	0	**0**	**0**
MSN	17	http://Web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTHIVAIDS/0,,menuPK:376477~pagePK:149018~piPK:149093~theSitePK:376471,00.html	0	0	0	1	1	1	1	1	**5**	**0.625**
Ask	88	http://womenandaids.unaids.org/	0	0	0	1	1	0	0	0	**2**	**0.25**

Google	25	http://www.aclu.org/hiv/index.html	0	0	0	1	1	1	1	1	**5**	**0.625**
Ask	89	http://www.ahrq.gov/data/hivnet.htm	0	0	0	0	0	0	0	0	**0**	**0**
MSN	8	http://www.aids.org/	0	0	0	0	0	1	0	0	**1**	**0.125**
Ask	18	http://www.aidsalliance.org	0	0	0	0	1	0	0	0	**1**	**0.125**
Ask	76	http://www.womenhiv.org/	0	0	0	0	0	0	0	0	**0**	**0**
Ask	97	http://www.aidslifecycle.org/	0	0	0	1	1	0	0	0	**2**	**0.25**
Google	41	http://www.aidsnyc.org/	0	0	0	0	0	0	0	0	**0**	**0**
MSN	54	http://www.aidsquilt.org/hivaidsstatistics.htm	0	1	0	1	0	0	0	0	**2**	**0.25**
Ask	94	http://www.aidssida.cpha.ca/	0	1	1	0	1	0	0	0	**3**	**0.375**
Google	78	http://www.ama-assn.org/ama/pub/category/1944.html	0	1	0	0	1	0	0	0	**2**	**0.25**
AOL	30	http://www.amfar.org/cgi-bin/iowa/index.html	0	0	1	1	0	0	0	0	**2**	**0.25**
Yahoo	66	http://www.apha.org/public_health/aids.htm	0	0	0	1	1	0	0	0	**2**	**0.25**
AOL	96	http://www.apicha.org/apicha/main.html	0	0	1	1	1	0	0	0	**3**	**0.375**
Ask	73	http://www.arkofrefuge.org/	0	0	0	1	1	0	0	0	**2**	**0.25**
Yahoo	34	http://www.ashastd.org/learn/learn_hiv_aids_overview.cfm	0	0	0	0	0	0	0	0	**0**	**0**
Ask	37	http://www.balmingilead.org/about/about.asp	0	0	1	1	1	1	1	0	**5**	**0.625**
MSN	92	http://www.basnyc.org/hiv_aids.htm	0	0	1	0	1	0	0	0	**2**	**0.25**
Ask	38	http://www.brta-lrta.org/	0	0	1	1	1	1	0	0	**4**	**0.4**
MSN	5	http://www.cdc.gov/hiv/resources/qa/index.htm	0	0	1	0	1	0	0	0	**2**	**0.25**
MSN	43	http://www.census.gov/ipc/www/hivaidsn.html	0	0	1	0	0	0	0	0	**1**	**0.125**
AOL	65	http://www.champnetwork.org/	0	0	0	1	1	0	0	0	**2**	**0.25**
Yahoo	81	http://www.cln.org/themes/aids.html	0	0	0	0	0	0	0	0	**0**	**0**

Yahoo	78	http://www.commini t.com/hivaids/	0	0	1	0	0	0	0	0	**1**	**0.125**
AOL	93	http://www.confere ncealerts.com/aids. htm	0	0	0	0	0	0	0	0	**0**	**0**
MSN	82	http://www.crs.org/ our_work/what_we _do/programming_ areas/aids/index.cf m	0	1	1	1	1	0	0	0	**4**	**0.5**
Google	75	http://www.doh.stat e.fl.us/Disease_ctrl/ aids/index.html	0	1	0	0	0	0	0	0	**1**	**0.125**
MSN	38	http://www.drugs.c om/aids.html	0	0	0	1	1	0	0	0	**2**	**0.25**
Google	59	http://www.duesber g.com/index.html	0	0	0	1	0	0	0	0	**1**	**0.125**
Google	46	http://www.eldis.org /hivaids/	0	0	0	1	1	0	0	0	**2**	**0.25**
Yahoo	8	http://www.emedici nehealth.com/hivai ds/article_em.htm	0	0	0	0	0	0	0	0	**0**	**0**
Yahoo	22	http://www.fda.gov/ oashi/aids/hiv.html	0	0	0	0	0	0	0	0	**0**	**0**
Google	49	http://www.gendera ndaids.org/	0	0	0	1	0	0	0	0	**1**	**0.125**
Ask	58	http://www.healingo urspirit.org	0	0	0	1	0	0	0	0	**1**	**0.125**
Google	51	http://www.health2 4.com/medical/Con dition_centres/777- 792-814.asp	0	0	0	0	1	1	1	0	**3**	**0.375**
MSN	66	http://www.helpfight hiv.org/	0	0	0	1	1	0	0	0	**2**	**0.25**
MSN	86	http://www.hivplus. com/	0	0	0	0	0	0	0	0	**0**	**0**
AOL	73	http://www.hivtest.o rg/	0	0	0	1	1	0	0	0	**2**	**0.25**
MSN	60	http://www.hrw.org/ doc/?t=hivaids&doc ument_limit=0,2	0	0	0	0	1	1	1	1	**4**	**0.5**
MSN	24	http://www.idph.stat e.il.us/aids/default. htm	0	0	0	1	0	0	0	0	**1**	**0.125**
AOL	29	http://www.kaiserne twork.org/Daily_rep orts/rep_hiv.cfm	0	0	1	0	0	1	0	1	**3**	**0.375**
Yahoo	86	http://www.kff.org/h ivaids/index.cfm	0	0	1	0	0	1	1	1	**4**	**0.5**
AOL	71	http://www.kidsheal th.org/parent/infecti ons/std/hiv.html	0	0	0	1	1	0	0	0	**2**	**0.25**
AOL	12	http://www.knowhiv	0	0	0	1	0	0	0	0	**1**	**0.125**

Ask	79	aids.org http://www.leagueagainstaids.com/	0	0	0	0	1	1	0	0	**2**		**0.25**

Average DII (for Site Accessibility): 0.261516854

Appendix H: Dimension of Interactivity Index (for Feedback)

Table showing the total number of interactive feedback tools for each Website, the page rank, the Dimension of Interactivity Index (DII) of each Website and the average DII for feedback at the bottom.

Search Engine	Pg. Rank	URL	Contact- Webmaster	Contact- Health professional	Contact- Other Web users	Contact - Professional moderator	E-mail option	Snail mail option	Helpline for counseling	Online Community (Message boards, chat room)	Cookies	RSS feeds	Total	Dimension of Interactivity Index (DII) - Total number of tools present per Website/ Total number of tools measured
Yahoo	68	http://www.mccchurch.org/Content/NavigationMenu/Resources/HIVAIDS/HIV_AIDS.htm	1	0	0	0	1	1	0	0	1	0	**4**	0.4
AOL	61	http://www.measuredhs.com/hivdata/	0	0	0	0	1	0	0	0	1	0	**2**	0.2
MSN	87	http://www.medicinenet.com/human_immunodeficiency_virus_hiv_aids/article.htm	0	0	0	0	0	0	0	0	1	1	**2**	0.2
Google	31	http://www.meds.com/hiv/hivindex1.html	1	0	0	0	1	1	0	0	0	0	**3**	0.3
Google	43	http://www.metrokc.gov/health/apu/	1	0	0	0	1	1	1	0	1	0	**5**	0.5
Google	87	http://www.millenniumcampaign.org/site/pp.asp?c=grKVL2NLE&b=186386	0	0	0	0	1	0	0	0	0	0	**1**	0.1
Google	86	http://www.napwa.org/	0	0	0	0	1	1	0	0	1	0	**3**	0.3
Yahoo	38	http://www.niaid.nih.gov/factsheets/hivinf.htm	1	0	0	0	1	1	0	0	1	0	**4**	0.4
MSN	45	http://www.omhrc.gov/hivaidsobservances/index.html	1	0	0	0	1	1	0	0	1	0	**4**	0.4

MSN	53	http://www.openhand.org/pages/srvs_hiv.html	0	0	0	0	1	1	0	0	1	0	**3**	0.3
Google	85	http://www.osophs.dhhs.gov/aids/	1	0	0	0	1	1	0	0	1	0	**4**	0.4
Ask	30	http://www.pedaids.org	0	0	0	0	1	1	0	0	1	0	**3**	0.3
Google	68	http://www.prb.org/template.cfm?template=InterestDisplay.cfm&InterestCategoryID=205	1	0	0	0	1	1	0	0	1	0	**4**	0.4
AOL	98	http://www.redcross.org/services/hss/hivaids/afam.html	0	0	0	0	1	1	0	0	1	1	**4**	0.4
MSN	48	http://www.rho.org/html/hiv_aids.htm	0	0	0	0	1	0	0	0	0	0	**1**	0.1
AOL	67	http://www.shirleys-wellness-cafe.com/aids.htm	0	0	0	0	0	0	0	0	0	0	**0**	0
Google	42	http://www.statehealthfacts.org/cgi-bin/healthfacts.cgi?action=compare&category=HIV%2FAIDS&welcome=1	1	0	0	0	1	0	0	0	1	0	**3**	0.3
Ask	49	http://www.synergyaids.com	0	0	0	0	1	1	0	0	1	0	**3**	0.3
Google	1	http://www.thebody.com/	0	1	1	0	1	1	1	1	1	0	**7**	0.7
MSN	62	http://www.tooelehealth.org/Community_Health/HIV_AIDS/HIV_AIDS_Main_Page.html	1	1	0	0	1	1	1	0	0	0	**5**	0.5
Ask	31	http://www.ucsf.edu/hivcntr/	0	1	0	0	1	1	1	0	0	0	**4**	0.4
Yahoo	80	http://www.un.org/Pubs/CyberSchoolBus/aids2003/	1	0	0	0	1	1	0	1	1	0	**5**	0.5
Yahoo	11	http://www.undp.org/hiv/	0	0	0	0	1	1	0	0	1	0	**3**	0.3
Google	19	http://www.unicef.org/aids/	1	0	0	0	1	1	0	0	1	1	**5**	0.5
AOL	68	http://www.utopia-asia.com/aids.htm	0	0	1	0	1	0	0	1	1	1	**5**	0.5
AOL	82	http://www.virology.net/ATVHIVGlossary.html	1	1	0	0	1	0	0	0	0	0	**3**	0.3
Yahoo	25	http://www.Webmd.com/diseases_and_conditions/hiv_aids.htm	1	1	0	0	1	0	1	0	1	0	**5**	0.5

AOL	51	http://www.whitehouse.gov/infocus/hivaids/	1	1	0	0	1	1	0	0	0	1	**5**	0.5
Yahoo	7	http://www.who.int/hiv/en/	0	0	0	0	1	1	0	0	1	1	**4**	0.4
MSN	31	http://aids.about.com/	0	0	0	0	0	0	0	0	1	1	**2**	0.2
Yahoo	10	http://aidsinfo.nih.gov/	1	1	0	0	1	1	0	0	1	0	**5**	0.5
AOL	55	http://allafrica.com/aids/	0	0	0	0	1	1	0	0	1	1	**4**	0.4
AOL	79	http://dhfs.wisconsin.gov/aids-hiv/	1	0	0	0	1	0	1	0	1	0	**4**	0.4
AOL	58	http://familydoctor.org/005.xml	1	0	0	0	1	0	1	0	1	0	**4**	0.4
Yahoo	36	http://health.yahoo.com/topic/hiv	1	0	1	0	1	1	0	1	1	1	**7**	0.7
Google	5	http://hivinsite.ucsf.edu/	1	1	0	0	1	0	0	0	1	0	**4**	0.4
Google	14	http://hrw.org/doc/?t=hivaids&document_limit=0,2	1	0	0	0	1	1	0	0	1	1	**5**	0.5
Yahoo	100	http://medicalcenter.osu.edu/patientcare/healthinformation/diseasesandconditions/infectious/aids/	0	0	0	0	1	0	0	0	1	0	**2**	0.2
Yahoo	91	http://psychology.ucdavis.edu/rainbow/html/aids.html	0	0	0	0	1	1	0	0	1	1	**4**	0.4
Ask	6	http://sis.nlm.nih.gov/hiv.html	0	0	0	0	1	0	0	0	0	1	**2**	0.2
Google	52	http://t8Web.lanl.gov/people/rajan/AIDS-india/	1	0	0	0	1	0	0	0	0	0	**2**	0.2
MSN	2	http://usinfo.state.gov/gi/global_issues/hiv_aids.html	1	0	0	0	1	0	0	0	1	1	**4**	0.4
MSN	78	http://wdh.state.wy.us/AIDS/ryan.htm	1	0	0	0	1	1	0	0	0	0	**3**	0.3
MSN	17	http://Web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTHIVAIDS/0,,menuPK:376477~pagePK:149018~piPK:149093~theSitePK:376471,00.html	1	0	0	0	1	1	0	0	1	1	**5**	0.5
Ask	88	http://womenandaids.unaids.org/	1	0	0	0	1	1	0	0	0	0	**3**	0.3
Google	25	http://www.aclu.org/hiv/index.html	0	0	0	0	1	1	0	1	1	1	**5**	0.5

Ask	89	http://www.ahrq.gov/data/hivnet.htm	1	0	0	0	1	0	0	0	1	0	**3**	0.3
MSN	8	http://www.aids.org/	1	0	0	0	0	0	0	0	0	0	**1**	0.1
Ask	18	http://www.aidsalliance.org	1	0	0	0	1	0	0	0	0	0	**2**	0.2
Ask	76	http://www.womenhiv.org/	1	0	0	0	1	1	0	0	0	0	**3**	0.3
Ask	97	http://www.aidslifecycle.org/	1	0	0	0	1	1	0	1	1	0	**5**	0.5
Google	41	http://www.aidsnyc.org/	1	0	0	0	1	1	0	0	0	0	**3**	0.3
MSN	54	http://www.aidsquilt.org/hivaidsstatistics.htm	1	0	0	0	1	1	0	0	1	0	**4**	0.4
Ask	94	http://www.aidssida.cpha.ca/	1	0	0	0	1	1	0	0	0	0	**3**	0.3
Google	78	http://www.ama-assn.org/ama/pub/category/1944.html	0	0	0	0	1	1	0	0	1	0	**3**	0.3
AOL	30	http://www.amfar.org/cgi-bin/iowa/index.html	0	0	0	0	1	1	1	0	0	0	**3**	0.3
Yahoo	66	http://www.apha.org/public_health/aids.htm	0	0	0	0	1	1	0	0	0	0	**2**	0.2
AOL	96	http://www.apicha.org/apicha/main.html	0	0	0	0	1	0	1	0	0	0	**2**	0.2
Ask	73	http://www.arkofrefuge.org/	0	0	0	0	1	1	0	0	0	0	**2**	0.2
Yahoo	34	http://www.ashastd.org/learn/learn_hiv_aids_overview.cfm	1	1	1	1	1	1	1	1	0	0	**8**	0.8
Ask	37	http://www.balmingilead.org/about/about.asp	1	0	1	1	1	1	1	1	0	0	**7**	0.7
MSN	92	http://www.basnyc.org/hiv_aids.htm	0	0	0	0	1	1	1	0	0	0	**3**	0.3
Ask	38	http://www.brta-lrta.org/	1	0	0	1	1	1	0	0	0	0	**4**	0.4
MSN	5	http://www.cdc.gov/hiv/resources/qa/index.htm	0	0	0	0	1	0	0	0	1	1	**3**	0.3
MSN	43	http://www.census.gov/ipc/www/hivaidsn.html	0	0	0	0	1	1	0	0	0	0	**2**	0.2
AOL	65	http://www.champnetwork.org/	0	0	0	0	1	1	0	0	0	0	**2**	0.2
Yahoo	81	http://www.cln.org/themes/aids.html	0	0	0	0	1	0	0	0	0	0	**1**	0.2
Yahoo	78	http://www.comminit.com/hivaids/	1	0	1	1	1	1	0	1	1	0	**7**	0.7
AOL	93	http://www.conferencealerts.com/aids.htm	1	0	0	0	0	0	0	0	0	0	**1**	0.1

MSN	82	http://www.crs.org/our_work/what_we_do/programming_areas/aids/index.cfm	1	0	0	0	0	1	0	0	0	0	**2**	0.2
Google	75	http://www.doh.state.fl.us/Disease_ctrl/aids/index.html	0	1	0	0	1	1	1	0	0	0	**4**	0.4
MSN	38	http://www.drugs.com/aids.html	0	0	1	1	1	0	0	1	1	0	**5**	0.5
Google	59	http://www.duesberg.com/index.html	0	0	0	0	1	1	0	0	0	0	**2**	0.2
Google	46	http://www.eldis.org/hivaids/	0	0	0	0	0	0	0	0	0	1	**1**	0.1
Yahoo	8	http://www.emedicinehealth.com/hivaids/article_em.htm	1	1	0	0	1	0	0	0	1	0	**4**	0.4
Yahoo	22	http://www.fda.gov/oashi/aids/hiv.html	1	0	0	0	1	1	0	0	1	0	**4**	0.4
Google	49	http://www.genderandaids.org/	1	0	0	0	1	1	0	0	0	0	**3**	0.3
Ask	58	http://www.healingourspirit.org	1	1	0	0	1	1	1	0	0	0	**5**	0.5
Google	51	http://www.health24.com/medical/Condition_centres/777-792-814.asp	1	1	1	1	1	1	0	1	1	1	**9**	0.9
MSN	66	http://www.helpfighthiv.org/	0	1	0	0	1	0	1	0	1	0	**4**	0.4
MSN	86	http://www.hivplus.com/	0	0	1	1	0	0	0	1	0	0	**3**	0.4
AOL	73	http://www.hivtest.org/	1	0	0	0	1	1	1	0	0	0	**4**	0.4
MSN	60	http://www.hrw.org/doc/?t=hivaids&document_limit=0,2	1	0	0	0	1	1	1	0	0	1	**5**	0.5
MSN	24	http://www.idph.state.il.us/aids/default.htm	1	0	0	0	1	1	1	0	0	0	**4**	0.4
AOL	29	http://www.kaisernetwork.org/Daily_reports/rep_hiv.cfm	1	0	1	1	1	0	0	1	0	1	**6**	0.6
Yahoo	86	http://www.kff.org/hivaids/index.cfm	1	0	1	1	1	1	0	1	0	1	**7**	0.7
AOL	71	http://www.kidshealth.org/parent/infections/std/hiv.html	0	0	0	0	1	0	0	0	0	0	**1**	0.1
AOL	12	http://www.knowhivaids.org	0	0	0	0	0	0	1	0	0	0	**1**	0.1
Ask	79	http://www.leagueagainstaids.com/	1	0	0	0	1	1	0	0	1	0	**4**	0.4

Average DII (for Feedback): 0.362921348

Appendix I: Correlation between page rank and General Interactivity Index (GII)

Table showing the Websites listed in descending order according to their General Interactivity Index and their page rank on the search engines to determine whether or not a correlation exists. No such correlation was found.

Search Engine	Pg. Rank	Website/URL	General Interactivity Index (# of interactive tools present in the Website/total # of interactive tools being measured)
MSN	**38**	http://www.drugs.com/aids.html	**0.62**
Google	**1**	http://www.thebody.com/	**0.59**
Yahoo	**36**	http://health.yahoo.com/topic/hiv	**0.56**
Google	**51**	http://www.health24.com/medical/Condition_centres/777-792-814.asp	**0.54**
Google	**87**	http://www.millenniumcampaign.org/site/pp.asp?c=grKVL2NLE&b=186386	**0.51**
Yahoo	**25**	http://www.Webmd.com/diseases_and_conditions/hiv_aids.htm	**0.51**
Ask	**37**	http://www.balmingilead.org/about/about.asp	**0.51**
Google	**25**	http://www.aclu.org/hiv/index.html	**0.48**
Yahoo	**86**	http://www.kff.org/hivaids/index.cfm	**0.48**
Google	**19**	http://www.unicef.org/aids/	**0.45**
AOL	**51**	http://www.whitehouse.gov/infocus/hivaids/	**0.45**
MSN	**60**	http://www.hrw.org/doc/?t=hivaids&document_limit=0,2	**0.45**
AOL	**29**	http://www.kaisernetwork.org/Daily_reports/rep_hiv.cfm	**0.45**
Ask	**30**	http://www.pedaids.org	**0.43**

Google	**14**	http://hrw.org/doc/?t=hivaids&document_limit=0,2	**0.43**
MSN	**17**	http://Web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTHIVAIDS/0,,menuPK:376477~pagePK:149018~piPK:149093~theSitePK:376471,00.html	**0.43**
Yahoo	**78**	http://www.comminit.com/hivaids/	**0.43**
Google	**49**	http://www.genderandaids.org/	**0.43**
Google	**43**	http://www.metrokc.gov/health/apu/	**0.4**
MSN	**45**	http://www.omhrc.gov/hivaidsobservances/index.html	**0.4**
AOL	**68**	http://www.utopia-asia.com/aids.htm	**0.4**
Google	**5**	http://hivinsite.ucsf.edu/	**0.4**
Google	**78**	http://www.ama-assn.org/ama/pub/category/1944.html	**0.4**
Yahoo	**34**	http://www.ashastd.org/learn/learn_hiv_aids_overview.cfm	**0.4**
AOL	**98**	http://www.redcross.org/services/hss/hivaids/afam.html	**0.37**
Yahoo	**80**	http://www.un.org/Pubs/CyberSchoolBus/aids2003/	**0.37**
Yahoo	**7**	http://www.who.int/hiv/en/	**0.37**
Yahoo	**10**	http://aidsinfo.nih.gov/	**0.37**
Yahoo	**91**	http://psychology.ucdavis.edu/rainbow/html/aids.html	**0.37**
MSN	**2**	http://usinfo.state.gov/gi/global_issues/hiv_aids.html	**0.37**

Ask	**38**	http://www.brta-lrta.org/	**0.37**
MSN	**5**	http://www.cdc.gov/hiv/resources/qa/index.htm	**0.37**
MSN	**87**	http://www.medicinenet.com/human_immunodeficiency_virus_hiv_aids/article.htm	**0.35**
Yahoo	**38**	http://www.niaid.nih.gov/factsheets/hivinf.htm	**0.35**
Yahoo	**11**	http://www.undp.org/hiv/	**0.35**
MSN	**31**	http://aids.about.com/	**0.35**
AOL	**79**	http://dhfs.wisconsin.gov/aids-hiv/	**0.35**
Ask	**97**	http://www.aidslifecycle.org/	**0.35**
Google	**68**	http://www.prb.org/template.cfm?template=InterestDisplay.cfm&InterestCategoryID=205	**0.32**
Google	**42**	http://www.statehealthfacts.org/cgi-bin/healthfacts.cgi?action=compare&category=HIV%2FAIDS&welcome=1	**0.32**
MSN	**62**	http://www.tooelehealth.org/Community_Health/HIV_AIDS/HIV_AIDS_Main_Page.html	**0.32**
Yahoo	**100**	http://medicalcenter.osu.edu/patientcare/healthinformation/diseasesandconditions/infectious/aids/	**0.32**
Ask	**18**	http://www.aidsalliance.org	**0.32**
MSN	**82**	http://www.crs.org/our_work/what_we_do/programming_areas/aids/index.cfm	**0.32**

MSN	**86**	http://www.hivplus.com/	**0.32**
Yahoo	**68**	http://www.mccchurch.org/Content/NavigationMenu/Resources/HIVAIDS/HIV_AIDS.htm	**0.29**
Google	**86**	http://www.napwa.org/	**0.29**
AOL	**58**	http://familydoctor.org/005.xml	**0.29**
MSN	**54**	http://www.aidsquilt.org/hivaidsstatistics.htm	**0.29**
Yahoo	**22**	http://www.fda.gov/oashi/aids/hiv.html	**0.29**
AOL	**73**	http://www.hivtest.org/	**0.29**
AOL	**71**	http://www.kidshealth.org/parent/infections/std/hiv.html	**0.29**
MSN	**53**	http://www.openhand.org/pages/srvs_hiv.html	**0.27**
Google	**85**	http://www.osophs.dhhs.gov/aids/	**0.27**
Ask	**31**	http://www.ucsf.edu/hivcntr/	**0.27**
Ask	**88**	http://womenandaids.unaids.org/	**0.27**
AOL	**30**	http://www.amfar.org/cgi-bin/iowa/index.html	**0.27**
Google	**59**	http://www.duesberg.com/index.html	**0.27**
Google	**46**	http://www.eldis.org/hivaids/	**0.27**
Yahoo	**8**	http://www.emedicinehealth.com/hivaids/article_em.htm	**0.27**
Ask	**49**	http://www.synergyaids.com	**0.24**
Ask	**6**	http://sis.nlm.nih.gov/hiv.html	**0.24**
Ask	**94**	http://www.aidssida.cpha.ca/	**0.24**

Google	**75**	http://www.doh.state.fl.us/Disease_ctrl/aids/index.html	**0.24**
Ask	**58**	http://www.healingourspirit.org	**0.24**
MSN	**66**	http://www.helpfighthiv.org/	**0.24**
AOL	**12**	http://www.knowhivaids.org	**0.24**
Ask	**79**	http://www.leagueagainstaids.com/	**0.24**
AOL	**82**	http://www.virology.net/ATVHIVGlossary.html	**0.21**
AOL	**55**	http://allafrica.com/aids/	**0.21**
Yahoo	**66**	http://www.apha.org/public_health/aids.htm	**0.21**
MSN	**92**	http://www.basnyc.org/hiv_aids.htm	**0.21**
MSN	**24**	http://www.idph.state.il.us/aids/default.htm	**0.21**
AOL	**61**	http://www.measuredhs.com/hivdata/	**0.18**
Google	**31**	http://www.meds.com/hiv/hivindex1.html	**0.18**
AOL	**67**	http://www.shirleys-wellness-cafe.com/aids.htm	**0.18**
MSN	**8**	http://www.aids.org/	**0.18**
Google	**41**	http://www.aidsnyc.org/	**0.18**
AOL	**96**	http://www.apicha.org/apicha/main.html	**0.18**
MSN	**48**	http://www.rho.org/html/hiv_aids.htm	**0.16**
MSN	**78**	http://wdh.state.wy.us/AIDS/ryan.htm	**0.16**
Ask	**76**	http://www.womenhiv.org/	**0.16**
Ask	**73**	http://www.arkofrefuge.org/	**0.16**
AOL	**65**	http://www.champnetwork.org/	**0.16**
AOL	**93**	http://www.conferencealerts.com/aids.htm	**0.16**

Google	**52**	http://t8Web.lanl.gov/people/rajan/AIDS-india/	**0.13**
Ask	**89**	http://www.ahrq.gov/data/hivnet.htm	**0.13**
MSN	**43**	http://www.census.gov/ipc/www/hivaidsn.html	**0.13**
Yahoo	**81**	http://www.cln.org/themes/aids.html	**0.08**

Appendix J: Spearman's rho

Correlations

			GII	Pg. Rank
Spearman's rho	GII	Correlation Coefficient	1.000	-.275(**)
		Sig. (2-tailed)		.009
		N	89	89
	Pg. Rank	Correlation Coefficient	-.275(**)	1.000
		Sig. (2-tailed)	.009	
		N	89	89

** Correlation is significant at the 0.01 level (2-tailed).